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IRON TRADE REVIEW

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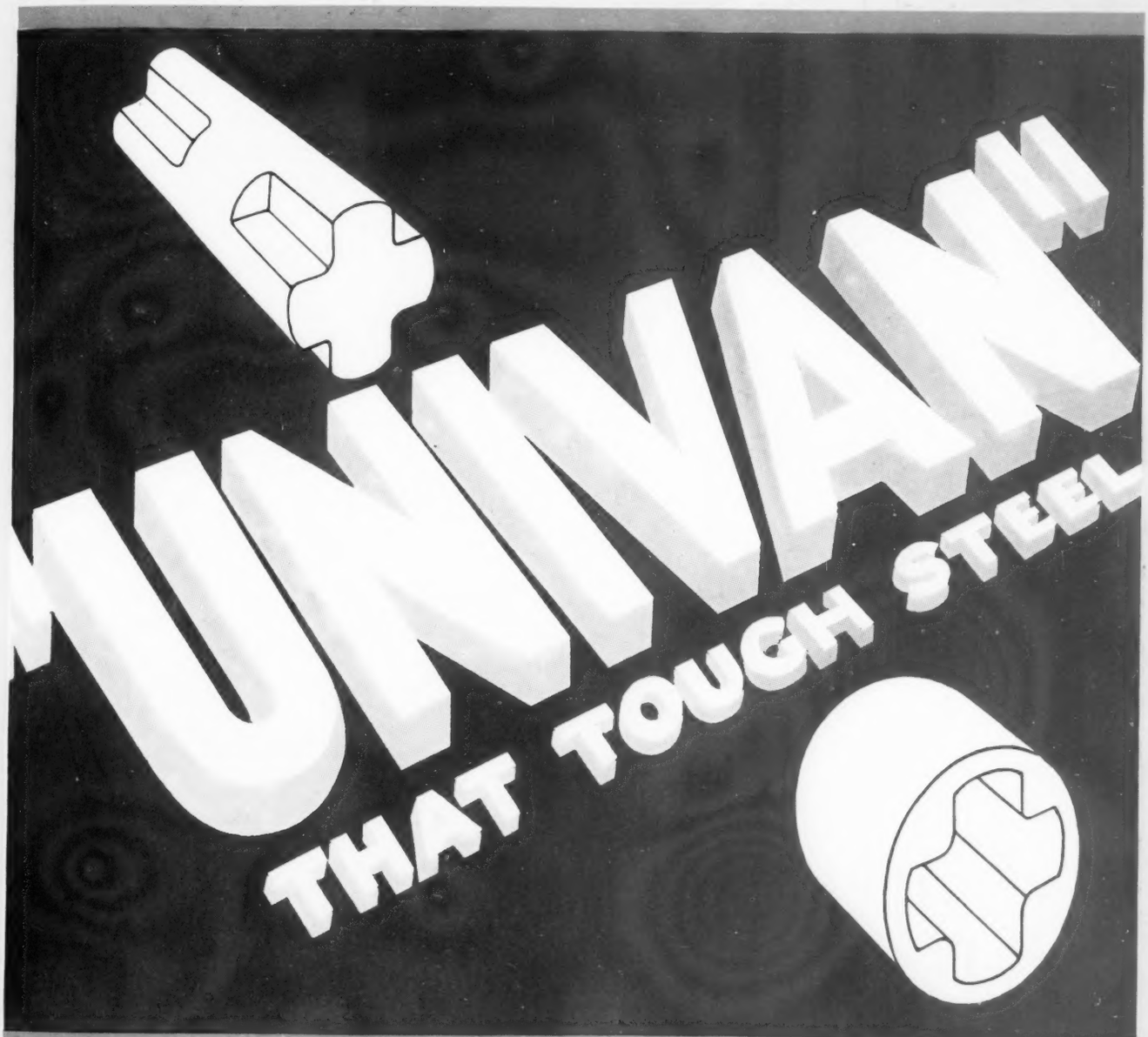

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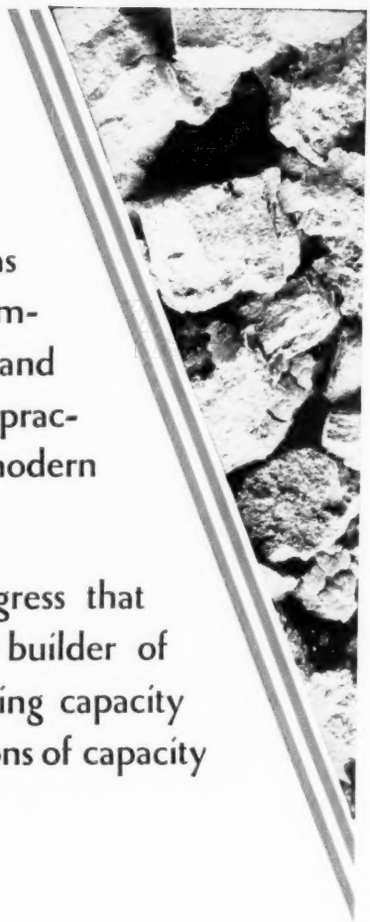

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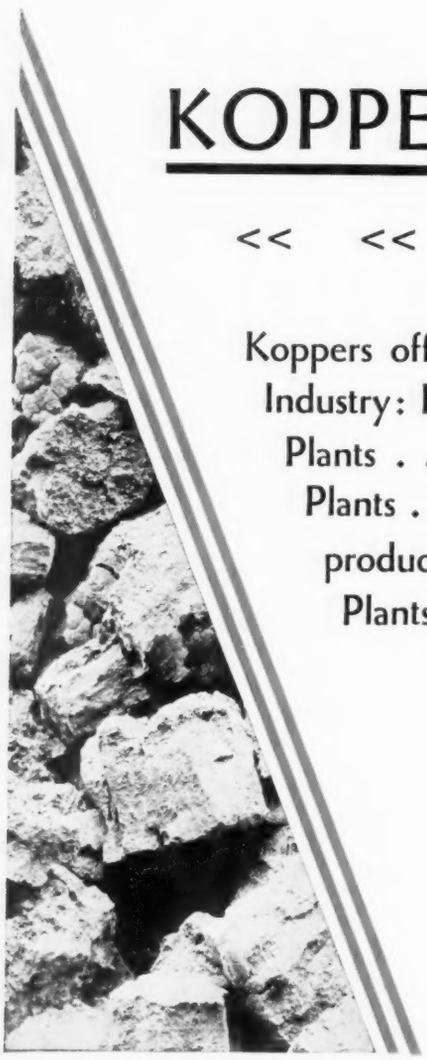

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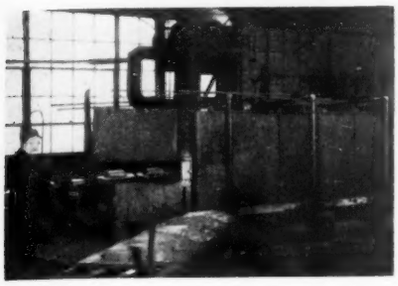

Stamping and Forging Nirosta and Nitralloy Steels. Page 43.

THIS WEEK:

READERS have been expressing their opinions of STEEL *since the name was substituted for Iron Trade Review. While it is impractical to publish all of them, excerpts from many have been printed, and another group appears on page* 35 *this week. Readers prefer* STEEL *for its crispness and interpretive method of presenting business, market and technical news. It has not narrowed its field, but broadened it, and readers may be sure that none of their interests which gave Iron Trade Review its prestige will be sacrificed in* STEEL.

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Volume 87 Number 5

IRON TRADE REVIEW
STEEL

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

ENDURANCE contests being the rage, the steel industry continues its effort to determine how long it can subsist on hope. As for several weeks, the conviction is strong that the market situation will grow no worse and as fall approaches will participate in a general recovery of business. But as for tangible, tonnage business to bridge the gap, there is little. Structural awards are fair, some ship plate business is developing, pipe mills operate well against good backlogs, but summer apathy, vacations, two and three-week plant shutdowns are a handicap. (Page 63). . . . This depression is world wide, if that be any consolation. Distress of European steelmakers is manifest in production figures for May, which for Great Britain and Germany are the level of 1926 and for Belgium at 1927. France, however, almost topped last May's record. (Page 90). . . . Speaking of the British, they are placing increasing reliance upon furnaces with motor-driven rotary hearths for annealing, case-hardening and other heating operations. A furnace of this type has been introduced in the United States, with low fuel consumption, close control over fuel mixtures, longer life of annealing pots and uniformity of product the chief virtues. (Page 51).

Soviet Manganese a Menace or Aid?

The shadow of the Russian bear is falling over business as well as politics. At the instigation of New York interests, a congressional committee is at present on a fishing trip—aptly named for Chairman Fish—to ascertain the extent of communistic agitation. The contention that penal labor is utilized in the production of Russian pulpwood and matches has been convincing enough to the treasury to warrant a ban on their importation. Now, American producers of manganese ore see in increased imports of soviet manganese a dumping plot to ruin them. Proscription of soviet ore, largely smelted by United States Steel and Bethlehem, is likely to be sought. (Page 26). . . . Just how much manganese has been imported recently may not be disclosed for some time, as revision of the tariff effective at midnight, June 17, has upset the department of commerce. Its statistics on June imports of all iron and steel products end abruptly on the 17th, and it may be several weeks before the results of the last half of the month are known.

New Steels Stimulating Research

Foreign iron and steel may be in less favor at the moment, but research work on the new chrome-nickel steels, some of them trans-

When they get on the fairway the game can proceed

planted from abroad, continues unflagging. Unusual problems confronted a Middle West interest in producing forgings and stampings from Nitralloy and Nirosta, the new Krupp steels. The former possesses noteworthy case-hardening properties without distortion, while the latter is thoroughly corrosion and heat-resistant. Forgings include crankshafts and pump shafts; stampings range from oil field accessories to kitchen utensils. (Page 43).

No Bonuses, Merger Interest Lags

Not every week can the Bethlehem-Youngstown Sheet & Tube merger trial, now in its fifth week at Youngstown, be expected to provide news of the caliber of the Bethlehem bonuses, and hence interest in the trial lags. Last week was largely given over to a recital of the routine of checking proxies and counting ballots. The next peak may develop when Cyrus S. Eaton, arch-opponent of the merger, takes the witness stand. (Page 25). . . . Because of their excellence, army-navy standards for aircraft materials are adopted voluntarily by the commercial aircraft industry. At a recent Army-Navy conference in Dayton, some new specifications were adopted, a few revisions of steel standards suggested and several new ones proposed. (Page 49). . . . Cantilever construction is being utilized in New York to free the choicest space in an apartment building—the corners—for occupancy. Instead of following orthodox practice and erecting large corner columns, the interior columns will be as large as 16 inches square, weighing 30,000 tons for 29 stories, and from them the outside walls will be cantilevered, permitting sun porches with unobstructed views at the corners. (Page 24).

Credit and Carry, Coming Auto Policy

A $1000 automobile for $700 is a possibility if automobile manufacturers, confronted with an unstable dealer situation, become their own distributors. Regardless of their inclinations, manufacturers are being forced into retailing. They are putting cars out on consignment, and General Motors alone has over $1,000,000 invested with its dealers. Since advertising and reputation are clinching so many sales, Detroit is speculating whether expense retail sales staffs can be eliminated, factory branches set up and order takers installed. At least 30 per cent could be shaved off the retail price, broadening potential markets. (Page 33). . . . Meanwhile, the automobile industry may try to lift itself by its bootstraps. It wonders if by stepping up production smartly this fall and expanding its outlays for labor and materials it could give the country the psychological push it appears to need so badly and thus initiate another buying cycle. (Page 32). . . . This would be something like the Chesapeake & Ohio railroad is doing in regard to its 1931 rails. It has distributed its orders, totaling 58,600 tons, permitting the mills to roll them at any time but not to bill them before January. . . . While price is conducive to accelerating automobile sales, appearance weighs heavily. Many appreciate the fine, flawless finish on the radiator shell and bright work, but few realize the effort it entails. In cold rolling steel, nickel, gold, silver, even foil, the rolls must be most accurately ground and have a mirror-like finish. A new grinding machine has been devised to provide this accuracy and polish. (Page 50).

Maintained Dividends Maintain Confidence

No one feared that the United States Steel Corp. would be influenced by the certainty of reduced earnings in the second quarter to lower its common dividend; nevertheless, the positive action of the directors of the Corporation in continuing the present rate must have a satisfying, constructive reaction. Bearing out the expectations of the men in the markets, the Corporation puts itself in record as looking for progressive improvement over the remainder of the year. Steel earnings, while revealing a substantial drop from record 1929, compare favorably with previous years of corresponding production. (Page 23). . . . A saving is always as good as a profit. An eastern manufacturer, unable to expand his plant or make extensive changes in his layout, turned to modern materials-handling methods for the solution of a vexing problem. He purchased four electric lift trucks to augment equipment already installed, and in less than a year his savings amounted to more than $80,000. (Page 52).

New Steel Uses Now a Serious Search

Steelmakers are beginning to take market research seriously. Some of the leading companies are going to great lengths to study the potential sales of steel for residences, barns, etc., where other materials have been favored for years. This attitude (Page 34) is in marked contrast to the apathy with which new markets were viewed by steel producers only a few years ago. . . . The enthusiasm with which a score or more of important steel companies are pioneering in the field of corrosion-resistant alloys is significant testimony.

Earnings of United States Steel Drop Slightly

TOTAL earnings of the United States Steel Corp. for the second quarter of 1930 were only slightly below those of the first quarter. Earnings after federal taxes but before depreciation, depletion, interest, etc. totaled $47,061,304 for April, May and June as compared with $49,615,397 for the first three months of the year. Taken individually May was the best month, with $16,570,790, while June was low with $14,376,931. Net profit for the second quarter was $32,126,717 as against $35,777,807 for the preceding three-month period.

The finance committee of the Corporation issued the following statement:

"At this date manufacturing plants are operating at about 63 per cent of capacity. Indications in the industry point to an increase in this rate of operations during the balance of this quarter with an improvement in volume during the last quarter of the year."

The regular quarterly dividends of $1.75 on common and $1.75 on preferred stock were declared.

The net profit of $67,904,524 for six months of 1930 is equal to $6.46 per common share as compared with $96,011,290 or $11.72 per share for the first half of 1929. Further comparisons are shown in the accompanying tables.

□ □ □

Inland Steel Co.'s net earnings in the second quarter were $2,620,300, after all charges, equal to $2.18 a share on common stock, compared with $2.27 in the first quarter of this year and $2.60 in the second quarter of 1929. Net income for the first half this year was $5,341,618, after charges, equivalent to $4.45 a share. Directors at Chicago declared the regularly quarterly dividend of $1 a share on common.

□ □ □

Newton Steel Co., Youngstown, O., reports net profit for the second quarter was $40,983, compared with $287,581 in the first quarter, and $799,928 in the second quarter, 1929. Profit for first half this year was $328,564, equivalent to 99 cents a share on common stock, compared with $5.90 in the first half of 1929.

□ □ □

National Steel Corp., Pittsburgh, and subsidiaries report net income for the six months ending June 30, 1930, of $6,102,102.57, after depreciation, depletion, interest and federal taxes, equivalent to $2.89 per share on the average number of shares outstanding during the period. These earnings approximately equal the earnings of the constituent companies of the corporation during the same period last year. This result does not include any earnings for the Great Lakes Steel Corp.

□ □ □

Follansbee Bros. Co., Follansbee, W. Va., has reduced its common dividend from 75 cents to 50 cents. Profit for the first half, after taxes, depreciation, etc., was $4353. Regular quarterly dividend of $1.50 was declared.

□ □ □

Colorado Fuel & Iron Co., Pueblo and Denver, Colo., reports net profit, before deduction for equipment dismantled, for second quarter of 1930 as $324,895, compared with $479,471 in 1929. For first half of 1930 net profit was $1,619,053, compared with $1,419,453 for first half of 1929.

□ □ □

Virginia Iron, Coal & Coke Company, Roanoke, Va. reports a net loss of $68,765 for second quarter. Including allowance for depreciation and depletion, amounting to $8818, net loss for first half of 1930 was $110,219.

□ □ □

Spang, Chalfant & Co., Pittsburgh, report net earnings in the second quarter $1.01 per common share, against 98 cents a year ago. First half profits equal $1.66 a share; $2.52 a year ago.

Steel Corporation's Quarterly Report Summarized

	Second quarter 1930	First quarter 1930	Second quarter 1929
Total earnings	$47,061,304	$49,615,397	$71,995,461
Less depletion, depreciation, etc.	15,921,493	14,813,529	15,919,386
Net income	31,139,811	34,801,868	56 076,075
Less bond interest	1,409,730	1,420,697	2,250,232
Balance	29,730,081	33,381,171	53,825,843
Add special income*	2,396,636	2,396,636	.....
Total	32,126,717	35,777,807	.....
Dividends			
Preferred	6,304,919	6,304,919	6,304,919
Common	14,981,533	14,981,533	14,053,032
Surplus	10,840,265	14,491,355	33,467,892

*Quarterly apportionment of net interest on Federal tax refunds.

Pipe Welding Patents Are Held Valid by Court

Patent suit brought by Steel & Tubes Inc., Cleveland, a subsidiary of Republic Steel Corp., Youngstown, O., against the S. Jackson Tube Co. Inc., Brooklyn, N. Y., resulted in a verdict being handed down in favor of the plaintiff in United States district court in Brooklyn. The suit involved infringement of patents on the Johnston process for continuous

Monthly Earnings of United States Steel Corp.

	1930	1929	1928
January	$15,404,359	$18,759,098	$11,899,549
February	16,107,410	19,080,941	13,581,337
March	18,103,628	22,265,342	15,453,146
First quarter	49,615,397	60,105,381	40,934,032
April	16,113,583	22,361,428	13,927,481
May	16,570,790	25,604,641	16,646,845
June	14,376,931	24,029,392	16,538,660
Second quarter	47,061,304	71,995,461	46,932,986
First half	96,676,701	132,100,842	87,867,018

electric welding of pipe and tubes, and patents on the Belmont process for smoothing the welds in tubing made in continuous welding and machines, both patents being owned by the Republic corporation.

The Jackson company's process consisted in welding with edges out of register and was considered an infringement by Federal Judge C. G. Galston. This decision marks the third time that the patents on the Johnston process for continuous welding of pipe have been held valid.

Corner Steel Columns Are Eliminated in Apartment

New York—The largest columns in the steel frame of the Majestic apartments, Central Park West and Seventy-first streets, will be 16 inches square, weighing about 30,000 pounds and will be fabricated by the Hay Foundry & Iron Works. Close to 7000 tons will be used in the 29-story apartments, the largest tonnage awarded for apartment construction in New York this year.

The steel design calls for cantilever construction with complete elimination of steel columns at principal corners to allow private sun or screen porches with unobstructed light and air. The steel has been so laid out that it will permit flat ceilings with special cornice treatment at the intersections of the walls and ceilings in place of the exposed beams.

Obsolete Cruisers Offered

Washington—Navy department will open bids Aug. 7 for the sale of the obsolete cruisers HUNTINGTON and ST. LOUIS, now out of commission at the Philadelphia navy yard. Certain armor plates must be removed from the vessels and returned to the government. From the HUNTINGTON there will be approximately 7190 gross tons of ferrous metals, 2572 tons of armor and 461 tons of nonferrous metals. From the ST. LOUIS there will be approximately 5098 tons of ferrous metals, 1901 tons of armor and 327 tons of nonferrous metals.

Tool, Shovel Makers Merge

American Fork & Hoe Co., Cleveland, Kelley Axe & Tool Co., Charleston, W. Va., and Skelton Shovel Co., Dunkirk, N. Y., are being merged as the American Fork & Hoe Co., with headquarters at Cleveland. The merger is being effected by an exchange of stock. Similarity of products is expected to make for savings in distribution. It is said leading officers will remain.

Tungsten Imports Drop; Chrome, Vanadium Gain

New York—Imports of tungsten content, mainly in ore, were 511,494 pounds in May, lighter than in May last year, but heavier than the monthly average this year. Imports in five months this year have been 2,137,618 pounds, compared with 3,183,130 pounds in the similar period of 1929. Consumption probably has fallen more than these figures show.

Imports of chrome ore in five months have been 166,800 tons, an increase of 65,000 tons over the similar period a year ago. Imports of ferrochrome, pure chromium and chromium-vanadium have been 194,731 pounds, only a little more than one-third the imports a year ago.

Imports of vanadium ore have increased to 3521 tons in five months, compared with only 390 tons a year ago. Nearly all of the country's vanadium formerly was imported, but now much is produced in this country.

Canadian Steel Output Gains Slightly in June

Toronto, Ont.—Production of steel ingots and direct castings in Canada amounted to 95,321 tons in June, an increase of 4 per cent over that in May, but a decrease of 20 per cent from June, 1929. Production in the first half this year totaled 628,993 tons, a reduction of nearly 15 per cent from 738,842 tons in the comparable period last year.

Output of pig iron in June, 66,081 tons, dropped 18 per cent from that in May, and 27 per cent from June, 1929. The production of basic iron in June was 56,482 tons. In the first half this year 451,186 tons of pig iron was produced, 13 per cent less than in the first half of last year. June output of ferroalloys was 11,059 tons, the highest monthly figure on record. The production was 42 per cent over that of May, and 60 per cent greater than in June, 1929.

More Energy from Oil, Water, Less from Coal

Study of the relative development of coal, oil and water power in the United States, made by the bureau of mines, reveals that while coal remains the largest source of power it has declined since 1918, while oil and waterpower have increased greatly.

Taking 1918 as a base at 100 anthracite coal has dropped its index to 78 and bituminous coal to 92. Total coal's index for 1929 was 90. On the same basis total power from gas and oil in 1929 has an index of 271 and waterpower of 230. The index for power from the three classes combined is 121. This represents an increase in power production of 21 per cent in the 12 years.

Of total energy developed in 1929 coal supplied 65.3 per cent, oil and gas 34.7 per cent and waterpower 7.9 per cent. Natural gas supplied 8.2 per cent of the total energy, slightly more than waterpower. With present development for use of natural gas this percentage seems likely to be increased greatly.

Effect of Foundry Variables on Steel Castings Studied

Foundry variables and their effect upon the strength, ductility and soundness of steel castings have been the subject of an extensive research by the bureau of standards, Washington. With the increasing use of steel castings for industrial purposes, heavier demands as regards specifications are being made. Greater strength and ductility are demanded, foundrymen often being called on to produce castings having a minimum strength of 60,000 pounds per square inch, an elongation of 24 per cent on a 2-inch gage of 0.505-inch diameter, with a reduction in cross sectional are of 35 per cent.

These properties usually can be obtained if castings are poured in dry or core sand molds. Green sand or moist sand molding, however, is usually desired for most work. With the customary moist sand molds, it is frequently found that pin holes occur at places where the moisture is trapped. If aluminum is added to the steel shortly before pouring, about 1 pound per ton, the porosity trouble is usually overcome but the resulting castings will have lower ductility than if aluminum had not been added.

The bureau has determined further that if the composition is maintained between 0.10 and 0.17 per cent carbon, the manganese between 0.60 and 0.70 per cent, and the silicon between 0.30 and 0.40 per cent, the addition of the customary aluminum shortly before pouring will give steel castings which are usually within the specified limits of ductility after the heat treating operation.

New Wickwire Plan Nears

Wickwire-Spencer Steel Co., with plants at Buffalo and in the Worcester, Mass., district, may shortly pass from receivers' hands. A reorganization plan, amending the one proposed a year ago, gives promise of being adopted. In effect, common stockholders would be eliminated, and noteholders given more recognition.

Records of Votes Feature Fifth Week in Merger Trial

HEARING of the suit to enjoin the merger of the Bethlehem Steel Corp. and Youngstown Sheet & Tube Co. has entered its fifth week in the common pleas court of Mahoning county, Youngstown, O. The trial has been moving slowly, intense heat causing frequent recesses and early adjournments, and it may continue through the greater part of August. Lawyers closely identified with the case do not anticipate a final decision by higher courts for more than a year. Less talk is heard of a compromise or settlement.

Walter E. Meub, secretary-treasurer, Sheet & Tube company, was on the witness stand Monday and Tuesday when documents, files and records that were in the hands of the inspectors, who counted the ballots and passed on the proxies voted in the merger contest, were introduced in evidence.

Seventeen separate exhibits each in the form of many pages of photostat copies of the originals were offered by Luther Day, counsel for the anti-merger group, and identified by Mr. Meub, in addition to other records which the witness brought to court. He testified that after the election inspectors had been chosen all documents were turned over to them and were later returned to him, when lawyers for both sides had access to them. He explained the details of keeping the records of stockholders' shares and the proxies. He pointed out that a total of 154,619 shares were not voted, of which 124,740 shares were owned by the Cliffs Corp., Cleveland.

Tells of Bethlehem Issue

F. B. Sheppard, vice president, Guaranty Co., New York, told the court last week of the Bethlehem stock issue late in the fall of 1929. The flotation was for 800,000 shares and was marketed by the combined efforts of an underwriting group and an underwriting syndicate. It was attempted to show that Guaranty Co., due to the stock market collapse, was anxious that Bethlehem merge with Sheet & Tube since stock value would be enhanced, as the underwriters had a quantity of stock left unsold when the crash came. It was also pointed out that H. G. Dalton, a managing partner in Pickands, Mather was a director of the Guaranty Trust Co., New York, of which the Guaranty Co. is a subsidiary.

Following the inquiry dealing with directors' dealings and obligations to their stockholders the trial proceeded to the taking of proxy evidence. A legal tangle soon developed with Attorney Harry Burns, of Bethlehem counsel, objecting to the introduction of evidence on the proxies voted at Youngstown, April 8, on the allegation that no groundwork had been laid and that the plaintiffs had not objected to the proxies voted before the inspectors at Youngstown, April 8. Judge Jenkins conditionally overruled Mr. Burns, and Park Chamberlin, anti-merger attorney, went on to introduce the first of six classes of proxy evidence, that dealing with fiduciary votes of estates owning Sheet & Tube common. Many holdings were revealed, and the plaintiffs charged that while all the shares were voted for the merger no application had been made by fiduciaries to the probate court for orders to distribute, sell or exchange the stock. The introduction of proxy evidence continued during the latter part of the week.

Bonus Kept in Dark

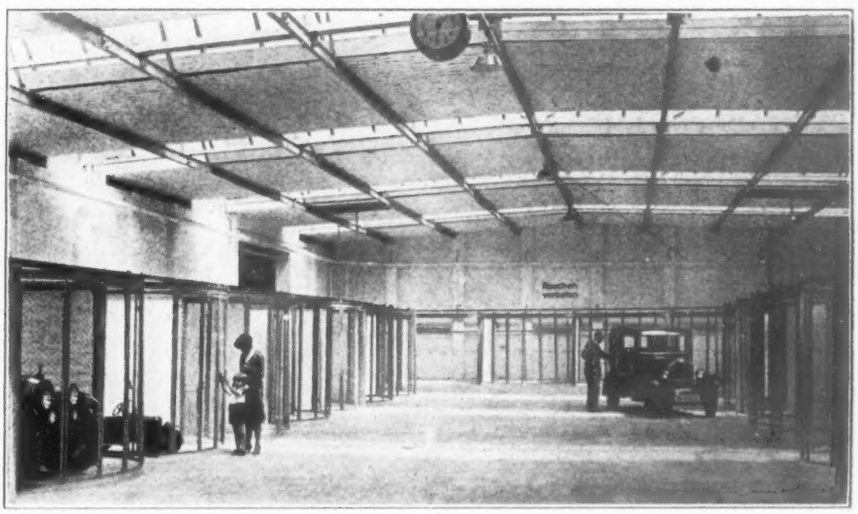
George O. May, senior partner, Price Waterhouse & Co., accountants who handled the Bethlehem and Youngstown books to ascertain a stock exchange ratio, testified. He said that while he had knowledge of the Bethlehem bonus system, there was no evidence in the Bethlehem annual report to show that it existed, and that an "outsider" would have no knowledge that large sums were being distributed to key men in the Bethlehem organization.

Another witness was W. B. Hall, Youngstown, one of the executors of the John Stambaugh estate which owned 12,000 shares of Sheet & Tube common. Mr. Hall said that while the Sheet & Tube offices occupied the Stambaugh building owned by the Stambaugh estate, on a month to month lease, no definite lease had ever been signed until on or about April 4 when a three-year contract at $99,000 a year was negotiated. A short time later the Stambaugh executors voted the proxies on their 12,000 shares in favor of the merger.

Refutes Hall's Testimony

Elton Hoyt, II a managing partner in Pickands, Mather, followed Mr. Hall on the stand and testified that while in New York about April 1 Mr. Hall had gone to the office of Eugene G. Grace, Bethlehem president, to ascertain details on how to vote the 12,000 shares. Mr. Stambaugh, who was with Mr. Hall, mentioned the Stambaugh building being without definite lease and wondered if the merger went through if Sheet & Tube headquarters would be removed from Youngstown. Mr. Grace replied, according to the testimony, that if the new subsidiary were treated as the others acquired by Bethlehem the officers would not be moved.

Further proxy evidence was then introduced on the holdings of trust and security companies and other organizations, the question as to



Henry Miller News Picture Service

AUTOMOBILES "CAGED" IN THIS NEW TYPE OF GARAGE

When the business man or feminine shopper in Berlin drives a car into this building instead of turning it, keys and all, over to an attendant, he or she drives it into a cage-like compartment, built of steel. Each compartment has a door and lock, and once in this wire-enclosed cell the car and its contents are safe from thieves and collision with other machines. It's a new use for steel

validity being that the proper officer of the particular organization was not qualified to vote the shares. This was objected to by Attorney Burns, but the evidence was conditionally admitted.

New York Large Metal Manufacturing Center

New York, normally regarded as a financial center and a playground, is also a large manufacturer, according to the Merchants Association of New York. The metal industry, with an annual output of almost $400,000,000, is the fourth largest industrial group of the city. Included in New York's production are $19,000,000 worth of electrical machinery and supplies, $70,000,000 of foundry and machine shop products, $13,000,000 of structural and ornamental iron and steel work, $13,000,000 of gas and electric fixtures, $28,000,000 of brass, bronze, etc.

Embargo To Be Sought on Soviet Manganese Ore

Washington—Dumping of manganese ore in the United States by the soviet government of Russia is frustrating the policy of congress in maintaining the 1-cent a pound duty on ore and is paralyzing the domestic manganese ore industry, according to J. Carson Adkerson, president, American Manganese Producers' association.

Soviet manganese is being offered at $24 per ton, compared with $36 asked for American ore, and the transportation charges are $14.25, according to Mr. Adkerson. Soviet officials claim they will meet any domestic price, he claims. To remedy the situation an embargo, similar to that imposed by the treasury department on soviet pulpwood and matches, may be asked.

Principal American users of manganese are the United States Steel Corp. and the Bethlehem Steel Co. The former, with large mines in Brazil, is understood recently to have closed a 5-year contract with the soviet government for 80,000 to 150,000 tons at $15. Bethlehem company, which domestic manganese people say will not buy from them, covers its needs in Russia.

Manganese mines in Georgia (Russia) were originally German-owned, but were confiscated in the war. The Harriman interests, of New York, sought to operate them on concession, but withdrew. Now the soviet government is mining the ore.

Large Russian-American Contracts Are Endangered

Anti-soviet activities in the United States, including banning by the treasury department of Russian pulpwood, investigation of communism by a congressional committee, threats to put an embargo on soviet manganese ore, and other acts are viewed with concern by numerous American firms now under contract with the soviet government for services and equipment. The Amtorg Trading Corp., New York, now under federal scrutiny, has purchased $87,000,000 worth of American equipment this year, including machine tools and iron and steel products, according to testimony given to the investigating committee. Purchases of American goods for the fiscal year 1928-1929 totaled $110,000,000.

Many equipment builders, engineering firms and others engaged in Russian work feel that the attack on soviet activities is based either on unfounded or greatly exaggerated assumptions and that the situation does not warrant reprisals by United States government agencies which may force the soviets to cancel American contracts.

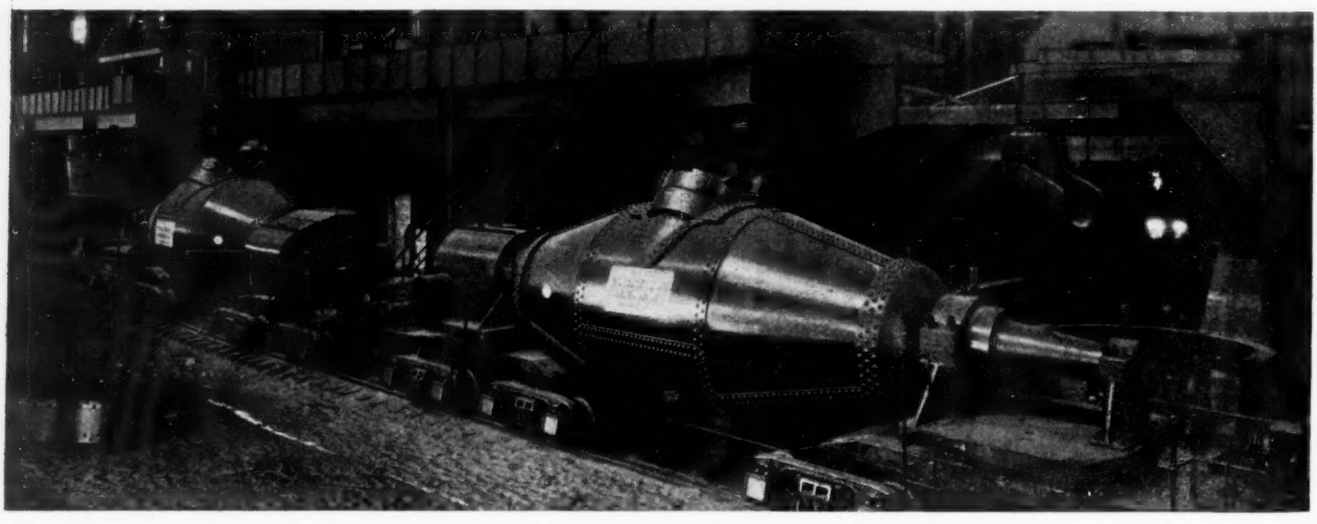
Expanded Steel Capacity Increases Roll Demand

Addition of nearly 5,000,000 tons to capacity of steel mills, now planned, is an important factor in the future of the Continental Roll & Foundry Co., Chicago, recently formed by merger of the Hubbard Steel Foundry Co., East Chicago, Ind., Duquesne Steel Foundry Co., Pittsburgh, and the Wheeling Mold & Foundry Co., Wheeling, W. Va.

The company is estimated to supply 35 per cent of all steel and steel alloy rolls and about 17½ per cent of all the gray and chilled iron rolls used in this country. It also is a large producer of miscellaneous steel castings and supplies about one-third of the annealing boxes made in the United States. Its annual capacity is about 48,000 tons of cast steel and iron rolls and 50,000 tons of other steel castings.

Earning power of the constituent companies has increased greatly during the recent expansion of steel production. Net sales have increased 25 per cent in the past five years, to $10,727,990, and net earnings available for interest, after depreciation, but before federal taxes have risen 120 per cent, to $1,764,272.

Diversification is obtained through manufacture of steel castings, standard machines and equipment and special machines and equipment built to order.



"BOTTLES" KEEP MOLTEN PIG IRON HOT MANY HOURS

***These 110-ton ladle-type hot iron mixers** are used to transport and keep hot the molten pig iron from the blast furnace and deliver it to the open-hearth furnace. These ladles are ready for use in the new plant of the Great Lakes Steel Corp., subsidiary of the National Steel Corp., at Ecorse, Mich. When the picture was taken they were in storage on the pouring side of the furnaces, though their work is on the upper level, on the charging floor*

Exports' Slump Increases in June to Low For Four Years

JUNE iron and steel exports showed a decline in more than four-fifths of its items and totaled only 159,392 tons, the lowest level for any month since February, 1926. Because the figures shown for the import trade cover only the first 17 days of June, it is impractical to compare that month with any other. The Smoot-Hawley tariff bill became effective on June 17 and import figures for the balance of the month are as yet unavailable, according to report of the iron and steel division, department of commerce, Washington.

For the third consecutive month exports dropped. In point of tonnage the month's chief product was scrap, of which 35,808 tons was shipped. Of the five major geographical divisions to which iron and steel products were exported in June, the Far East alone took a greater tonnage than it had in May; this increase, however, was slight.

Exports of iron ore from the United States rose to 194,262 tons in June against 49,923 tons in May, all going to Canada.

During the first 17 days of the

IMPORTS AND EXPORTS

Gross Tons

	—1930—		—1929—	
	Imports	Exports	Imports	Exports
Jan.	42,314	225,090	54,793	274,296
Feb.	43,351	197,426	58,146	259,711
Mar.	55,604	238,333	52,747	270,925
April	52,650	208,640	54,337	277,580
May	52,814	196,120	74,272	261,516
June	*29,138	159,392	63,635	247,811
Total (6 mos.)	275,871	1,225,001	357,930	1,591,839
July	.....	.....	71,378	270,532
Aug.	.....	.....	83,969	242,856
Sept.	.....	.....	60,974	222,408
Oct.	.....	.....	63,226	247,646
Nov.	.....	.....	54,041	241,829
Dec.	.....	.....	47,486	215,242
Total	.....	.....	739,004	3,032,352

*June 1 to 17.

ORIGIN OF JUNE IMPORTS

Gross Tons

	Ingots	Steel scrap	Cast iron pipe	Steel bars
Albania	.....	22	.....	.....
Belgium	476	.....	.....	162
Canada	25	1,556	.....	1
Czechoslovakia	.....	.....	.....	13
France	184	.....	1804	75
German	16	.....	.....	250
Italy	.....	14	.....	.....
Norway	1	.....	.....	.....
Netherlands	13	.....	.....	.....
Sweden	90	.....	.....	400
United Kingdom	4	15	.....	86
*Total	809	1,607	1,804	987

*June 1 to 17

IMPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Item	June 1930(4)	May 1930	June 1929
Pig iron	5,242	13,891	11,396
Ferromanganèse and alloys (1)	2,199	4,031	5,534
Ferrosilicon (2)	465	742	561
Ferrochrome (3)	57	.....	20
Scrap	1,607	1,749	6,658
Steel ingots, blooms, billets, etc.	809	1,117	1,671
Steel bars	987	3,101	3,170
Iron bars	43	62	672
Wire rods	774	490	1,336
Hoops, bands and scrolls	666	2,098	3,245
Sheets, skelp, and sawplate	2,763	1,558	2,266
Tin plate	28	11	27
Structural shapes	7,791	19,640	12,340
Rails and splice bars	103	467	1,332
Cast iron pipe	1,804	342	6,679
Other pipe and tube	1,916	1,587	4,032
Barbed wire	272	283	612
Round iron and steel wire	322	829	295
Flat wire and strip steel	75	110	162
Wire rope and strand	208	248	256
Nails, tacks, and staples	453	229	1,283
Bolts, nuts, rivets and washers	21	59	32
Castings and forgings	100	164	169
Miscellaneous	433	6	157
Total	29,137	52,814	63,905

(1) Manganese content.
(2) Silicon content.
(3) Chromium content.
(4) Includes figures from June 1 thru 17, old tariff being effective.

DESTINATION OF JUNE IRON AND STEEL EXPORTS

Gross Tons

	Gal. steel sheets	Tin terne plate	Black sheets	Steel bars
Argentina	88	730	68	74
Brazil	890	153	75	43
Canada	1255	4482	4386	3396
Cent. Amer.	617	1	6	117
Chile	.....	728	196	312
China	109	1407	163	149
Colombia	173	8	.....	37
Cuba	296	431	13	335
Dutch E. Indies	399	94	.....	.....
Finland	54	.....	.....	.....
France	.....	.....	361	39
Greece	.....	.....	.....	.....
Italy	.....	1250	178	.....
Japan	306	4259	229	51
Java	80	.....	7	.....
Mexico	520	782	140	95
Norway	86	.....	195	.....
Panama	280	.....	4	33
Philippines	1628	914	607	368
Peru	65	52	35	105
Soviet Russia	.....	.....	.....	8
Turkey	.....	.....	.....	.....
United King.	1	.....	113	1591
Uruguay	99	162	2	.....
Venezuela	96	.....	14	16
Total	7068	15,577	6862	7245

EXPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Item	June 1930	May 1930	June 1929
Pig iron not including ferro-alloys	1,000	1,072	3,106
Ferromanganese and spiegeleisen	1,163	1,004	104
Scrap	35,808	40,051	44,990
Ingots, blooms, etc.	1,675	1,788	4,199
Iron bars	112	188	171
Steel bars	7,245	7,893	12,249
Alloy steel bars	475	941	931
Wire rods	4,479	4,535	2,774
Plates	6,276	8,668	17,640
Skelp	7,239	15,695	13,674
Iron sheets, galvanized (1)	549	865	.....
Steel sheets, galvanized (1)	7,068	8,013	11,374
Steel sheets, black	6,862	9,896	16,948
Iron sheets, black	843	875	1,373
Hoops, bands and strip steel	3,249	4,611	6,275
Tin plate, terneplate, etc.	15,577	17,012	18,041
Structural shapes, not fabricated	10,229	10,123	31,268
Structural shapes, fabricated	8,573	9,332	7,363
Tanks, complete and knocked down (2)	855	973	.....
Metal lath	338	411	541
Steel rails	7,750	11,926	5,215
Rail fastening, switches, frogs, etc.	2,031	1,916	3,223
Boiler tubes	936	1,228	1,285
Casing and oil line pipe	3,314	7,880	8,509
Malleable - iron screwed pipe fittings	680	1,115	1,143
Cast-iron screwed pipe fittings	392	605	945
Cast-iron pressure pipe and fittings	1,001	1,342	1,430
Cast-iron soil pipe and fittings	1,632	849	1,042
Black and galvanized welded wrought - iron pipe (1)	1,036	1,573	.....
Black and galvanized welded steel pipe (1)	7,350	8,175	12,572
Plain wire	1,877	2,664	3,789
Barbed wire and woven wire fencing	4,790	4,462	6,395
Woven wire screen cloth	144	152	150
Wire rope	450	527	738
Insulated wire and cable, iron and steel	17	34	45
Other wire and manufacturers	624	634	1,017
Wire nails	625	623	952
Nails, other than wire	437	632	868
Tanks	47	40	60
Bolts, nuts, rivets etc., except railway	783	990	1,206
Iron castings	753	768	815
Steel castings	769	738	1,239
Car wheels and axles	1,653	2,494	1,448
Horseshoes	8	12	45
Forgings	678	795	663
Total	159,392	196,120	247,815

(1) Combined prior to 1930.
(2) Included in a miscellaneous classification prior to 1930.

ORIGIN OF MAY IRON AND STEEL IMPORTS
Gross Tons

	Iron Ore	Pig iron	Man-ganese	Ferro-manga-nese
Algeria and Tunis	14,350	.....	.....	.....
Australia	33,508	.....	.....	.....
Belgium	.....	.....	.....	.....
British India	.....	3,882	.....	.....
Brazil	12,303	.....	2,162	.....
Cuba	7,000	.....	.....	.....
Canada	.....	54	877	1,062
Chile	86,156	.....	.....	.....
France	.....	.....	.....	51
Germany	.....	.....	.....	.....
Italy	.....	.....	.....	88
Norway	.....	.....	.....	951
Netherlands	.....	51	.....	.....
Spain	6,180	.....	.....	.....
Sweden	15,052	505	.....	.....
Soviet Russia in Europe	15	.....	12,870	.....
United Kingdom	.....	750	13	47
*Total	174,564	5,242	15,922	2,199

*June 1 to 17.

DESTINATION OF IRON AND STEEL EXPORTS
Gross Tons

Country	June 1930	May 1930	June 1929
North & Central America & West Indies	75,622	102,791	139,454
Canada and Newfoundland	60,416	87,162	117,056
Cuba	3,897	3,347	4,624
Guatemala	349	251	335
Honduras	618	358	736
Mexico	7,145	7,934	10,876
Panama	1,043	708	1,045
Salvador	109	255	234
British West Indies	1,334	1,543	1,662
Other West Indies	425	839	2,127
Other Central America	286	394	759
South America	18,202	26,586	27,026
Argentina	3,663	5,397	8,420
Brazil	3,971	3,054	4,681
Chile	5,466	4,651	2,879
Colombia	1,216	4,492	2,723
Peru	902	2,080	2,365
Uruguay	1,695	3,160	374
Venezuela	1,095	2,873	5,189
Other South America	194	879	395
Europe	14,075	14,638	31,599
France	446	206	1,564
Germany	71	104	766
Italy	2,807	2,652	10,495
Poland and Danzig	.....	.....	7,406
Soviet Russia in Europe	908	1,897	159
Spain	405	14	2,771
Sweden	237	607	322
United Kingdom	4,500	5,123	5,455
Other Europe	4,701	4,035	2,661
Far East	50,122	49,681	46,981
British Malaya	447	337	85
China	2,908	3,807	4,587
Netherlands East Indies	1,950	4,770	3,269
India and Seylon	236	1,401	1,439
Hong Kong	129	217	302
Japan	36,909	27,801	27,558
Kwantung	87	2,615	609
Philippine Islands	6,488	3,780	5,078
Australia	483	1,080	2,593
New Zealand	268	278	226
Other Asia and	217	3,595	1,235
Far East Markets			
Africa	1,391	2,424	2,755
Union of South Africa	513	364	1,029
Egypt	116	146	1,100
Mozambique	78	187	288
Other Africa	664	1,727	338

month 29,137 tons of iron and steel products were imported. The largest item in this total was structural shapes with receipts amounting to 7791 tons, Belgium supplying about half of this sum. Germany led all other countries as the chief source of the June 1-17 imports of iron and steel products, her total being largely made up of sheets and shapes.

Canada continued to be the chief outlet for American iron and steel, despite a 30 per cent reduction in her committments to 60,299 tons. Japan was the second market in importance, her purchases increasing 9108 tons to total 36,909 tons in June. Other outstanding markets were Mexico which took 7145 tons of ferrous products, the Philippine islands with 6488 tons and Chile, 5466 tons.

June Steel Statistics Mixed

Though Trend Moves To Lower Levels

COMMERCIAL steel castings' orders booked slumped in June for the fourth consecutive month and were at 43 per cent of capacity. Production was also in a sharp decline, according to department of commerce figures:

1929	Total bookings	Per cent of capacity	Total production	Per cent of capacity
June	95,201	65	116,221	80
*(6 mos.)	723,934	76	669,495	78
July	103,356	71	118,100	81
Aug.	101,777	70	121,238	83
Sept.	86,584	59	106,995	73
Oct.	136,208	94	120,937	83
Nov.	97,888	67	110,297	76
Dec.	90,287	62	106,569	73
(year)	1,340,034	77	1,335,631	78
1930				
Jan.	101,728	70	109,296	76
Feb.	104,727	80	107,897	75
March	122,658	85	113,737	79
April*	93,200	65	110,903	77
May*	91,307	63	105,242	73
June**	61,516	43	91,108	63
(6 mos.)	585,136	68	638,183	73

*Revised. **Preliminary.

Coke Declines Further

With a shorter month, June production of by-product coke declined from that of May while tonnage of beehive coke increased slightly over that of May. The latter was not sufficient to bring total coke production to the level of May.

1929	By-product Coke	Beehive Coke	Total Coke
June	4,509,564	602,400	5,111,964
6 mos.	26,662,000	3,357,400	30,019,400
1930			
June	3,953,846	261,600	4,215,446
6 mos.	25,059,397	1,696,300	26,755,697

Boilers in Small Increase

Orders for steel boilers in June reported to the department of commerce totaled 1350, with 1,522,383 square feet of boiler surface, compared with 1283 boilers with 1,329,748 square feet in May. The total for six months is 6442 boilers, compared with 8725 for the same period in 1929. Square footage for six months is 7,206,588, compared with $9,743,852 for six months of 1929.

River Tonnage at Record

June river traffic in iron and steel products in the Pittsburgh district was the largest on record for that month and shipments for the first half of the year also set a new high mark.

	Allegheny	Monongahela	Ohio
1929			
June	722	116,157	116,679
(6 mos.)	1,482	560,951	537,027
July	25	109,051	102,963
August	100	134,426	137,734
Sept.	.....	135,773	150,163
Oct.	.....	119,380	119,129
Nov.	500	83,189	88,011
Dec.	400	60,957	77,885
Total	2,507	1,203,827	1,212,912
1930			
Jan.	100	58,784	64,736
Feb.	210	80,327	74,385
March	100	111,702	109,911
April	1,000	70,229	66,482
May	.....	117,942	128,502
June	700	137,603	144,099
(6 mos.)	2,110	576,587	588,115

Drop in Gray Iron Tonnage

Gray iron foundry production was 24,178 tons in June, or at 74 per cent of the average for the past three years, from reports by 162 foundries to the Gray Iron institute, Cleveland. The Canadian, New England and New York section was at a 78 per cent rate, with production at 6728 tons; other territory east of the Missippi river made 10.425 tons at a 77 per cent ratio; all territoy west of the Mississippi was at 71.5 per cent with output of 7621 tons.

Coal Production Holding

For the week ended July 19 bituminous coal production was 7,918,000 net tons compared with 7,861,000 for the week previous. The year to date totals 251,373,000 tons and is

(*Continued on Page* 31)

Industrial Men in the Day's News

A. L. Humphrey, President, Westinghouse Air Brake Co., Celebrates Seventieth Birthday

STARTING out as a farmer, he entered railroad work at the age of 17 as a machinist apprentice.

WIDE railroad experience gained in western states, chiefly Colorado, was followed by a brief period in Colorado's house of representatives.

NINETEEN THREE saw him started on his career with Westinghouse Air Brake, and in 16 years, 1903 to 1919, he rose from western manager to president.

MACHINIST apprentice, legislator and finally chief executive of one of the country's leading industrial concerns mark the high spots in the successful career of A. L. Humphrey, president, Westinghouse Air Brake Co., Pittsburgh and Wilmerding, Pa., who recently celebrated his seventieth birthday. The attainment of this milestone was the occasion for a testimonial banquet at Pittsburgh tendered by company executives and business associates of the district.

Mr. Humphrey was born at Buffalo, June 12, 1860, but spent his early days in Iowa and Nebraska. His career as a farmer was short lived, entrance into railroad work at the age of 17 proving the first step toward the high post he now holds. Mr. Humphrey's first railway service was as machinist apprentice for the Burlington & Missouri River system, subsequent experience being gained as machinist, foreman, master mechanic and superintendent of motive power on the Southern Pacific, Atlantic & Pacific, Colorado Midland, Colorado Southern railroads in the west, and the Chicago & Alton railroad.

While in Colorado he became interested in politics and was elected to the Colorado house of representatives for two terms, serving as speaker of the house for one term. In 1903 Mr. Humphrey became western manager at Chicago, for Westinghouse Air Brake Co., and was promoted to general manager at Pittsburgh two years later. He was elected vice president and general manager in 1910, a director in 1913, and in 1919 was named president, the position he still holds, in addition to executive posts in Westinghouse subsidiaries.

Mr. Humphrey has taken an active part in civic affairs of Pittsburgh and is a director of the chamber of commerce, of which he was president for two years. His interest in aviation is evidenced by his directorships in the Aviation Corp., New York, and the Pittsburgh Aviation Industries Corp. He is also chairman of the executive committee of the latter and is identified with Pittsburgh financial and industrial institutions.

C. E. HILKERT has been appointed manager of the recently created by-products division, Republic Steel Corp., Youngstown, O. He formerly was identified with Central Alloy Steel Corp., Massillon, O. Mr. Hilkert will have charge of sales of coke and coke by-products, scrap, used and old machinery.

Marcus A. Grossmann, chief assistant to F. J. Griffiths, president, Republic Research Co., Massillon, O., research subsidiary of Republic Steel Corp., has been presented a doctor of science degree by Harvard university for his work in studying the quality and behavior of special steels.

Stanley G. Disque has been appointed assistant district sales manager, Indianapolis district, and R. J. Working, assistant district sales manager, Cincinnati district, for Republic Steel Corp., Youngstown, O.

Subdistrict sales offices in the Chicago district have been established at Milwaukee and St. Paul. The Milwaukee office, located in the First Wisconsin National Bank building, is in charge of N. E. Nelson and the St. Paul office, in the Merchants Bank building, is in charge of R. W. Wentworth and C. V. Gardner.

□ □ □

P. J. Gibbons, formerly assistant secretary and treasurer, Vanadium Corp. of America, 120 Broadway, New York, has been elected secretary and treasurer to succeed Nils Falk, deceased. The latter's death was noted in IRON TRADE REVIEW, now STEEL, May 1, 1930.

□ □ □

Fred L. Wolf, head of the develop-

ing engineering, technical and plant control departments, Ohio Brass Co., Mansfield, O., was elected a director of the American Foundrymen's association at a directors' meeting July 16 at Detroit. He succeeds L. W. Olson, factory manager, Ohio Brass Co., resigned.

□ □ □

W. H. Wilson, formerly with National Scale Corp., New York, now is on the sales staff of Ferro Enamel Supply Co., Cleveland.

□ □ □

George Thomas III, treasurer of Lukens Steel Co., Coatesville, Pa., sailed from New York, July 25, for a two-month tour of Europe.

□ □ □

C. A. Webb has been appointed district sales manager at Chicago for Universal Atlas Cement Co., subsidiary of United States Steel Corp.

□ □ □

F. K. Knohl, formerly truck designer, Fargo Motors division, Chrysler Motor Co., Highland Park, Mich., now is research engineer, Illinois Tool Works, Chicago.

□ □ □

W. W. Slaght, until recently chassis experimental engineer, Pierce-Arrow Motor Car Co., Buffalo, now is chief engineer, Cleveland Steel Products Co., Cleveland.

□ □ □

A. G. Plimmer, formerly machine designer, National Carbon Co., Fremont, O., now is foreman in charge of the experimental department, Cincinnati Grinders Co. Inc., Cincinnati.

□ □ □

J. M. Schoonmaker Jr., vice president, treasurer and director, Standard Steel Spring Co., Coraopolis, Pa., has been elected president, General Aviation Corp. and Fokker Aircraft Corp., aviation subsidiaries of the General Motors Corp. He succeeds Harris M. Hanshue, resigned.

□ □ □

C. B. Woodworth, manager of the western division, with headquarters at Chicago, Vanadium Corp. of America, New York, and Bridgeville, Pa., has been appointed manager of the railroad division. Headquarters are continued in the Straus building, Chicago. Walter Smith has been appointed assistant manager, railroad division.

□ □ □

W. R. K. Scott, metallurgist, Aliquippa works, Jones & Laughlin Steel Corp., Pittsburgh, has been transferred to the general office as sales engineer on tubular products.

J. H. Flaherty, metallurgist, Pittsburgh works, has succeeded Mr. Scott as Metallurgist at Aliquippa. C. C. Henning has succeeded Mr. Flaherty at Pittsburgh works.

□ □ □

Howard H. Bristol, formerly vice president, Bristol Co., Waterbury, Conn., manufacturer of recording instruments, has been elected president to succeed the late William H. Bristol. Carlton W. Bristol now is vice president. Other officers are: Henry L. Griggs, vice president; Samuel R. Bristol, secretary-treasurer; and Harris Whittemore Jr., assistant treasurer.

□ □ □

H. E. Field, formerly president and general manager since 1914, Wheeling Mold & Foundry Co., Wheeling, W. Va., recently merged with Duquesne Steel Foundry Co., Pittsburgh, and Hubbard Steel Foundry Co., East Chicago, Ind., to form Continental Roll & Steel Foundry Co., Chicago, has been made vice president and treasurer of the parent company. He does not con-

H. E. Field

template immediate change in residence.

H. A. Lomax, formerly with Duquesne Steel Foundry Co., Pittsburgh, now is general manager, Wheeling Mold & Foundry division, Continental company.

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Byron M. Bird, for the past ten years with the United States bureau of mines, has been appointed chief concentration engineer, Battelle Memorial institute, Columbus, O., in charge of research work on both ore dressing and coal preparation. He has been located at the Alabama station of the bureau of mines since 1928, latterly as supervising engineer in charge of the southern experiment station.

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Robert W. Heerlein has resigned as president, treasurer and general manager, Flint Structural Steel Co., Flint, Mich., having sold his interest to Elmer R. Dail, manager, Jarvis Engineering Works, Lansing, Mich., who will succeed Mr. Heerlein as president of the Flint company. Mr. Heerlein will travel for several months before actively engaging in business.

Edward H. Perkins has been appointed treasurer and general manager.

Obituaries

M E. DANFORD, 53, assistant vice president since October, 1929, American Rolling Mill Co., Middletown, O., died in England from heart disease last week. Mr. Danford has been identified with the company since early 1910. He sailed for England in March this year to supervise operations at the company's new unit, the specialty steel division, John Summers & Sons Co. Ltd., Shotton works, Shotton, Chester, England.

□ □ □

John W. Davis, 55, retired marine engineer and inventor of a steel railroad tie and other devices, died July 16 at Wheeling, W. Va.

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Donald MacArthur, 50, vice president and director, Koppers Gas & Coke Co., Eastern Gas & Fuel Associates, Seaboard By-Product Coke Co., and vice president and director of a number of other subsidiaries of the Koppers Co., Pittsburgh, including Alan Wood Steel Co., died July 24. He was graduated from the University of Wisconsin, department of mechanical engineering, and formerly was superintendent of Laclede Gas Co., St. Louis.

Algoma Rebuilding Rail Mill

Sault Ste. Marie, Ont.—Algoma Steel Corp. proposes to start work immediately on the rebuilding of its rail mill. The proposed construction and equipment programs will cost $1,250,000. A number of contracts for work have already been let, including steel to Hamilton Bridge Co., Hamilton, Ont.; electrical equipment to Canadian Westinghouse Co., Hamilton. S. V. McLeod, Cornwall building, Sault Ste. Marie, is purchasing agent.

To Salute By-Product Coke

By-product coke and gas will be "saluted" Aug. 5 by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., in its series of radio "salutes" to important American industries. In the program, to be broadcast at 10 p. m. eastern daylight saving time by the National Broadcasting Co. and 36 stations, the history of the coke industry and the story of its development, including the recovery of valuable and helpful by-products will be narrated.

Here and There in Industry

LAKESIDE BRIDGE & STEEL CO., Milwaukee, has increased its capital from $500,000 to $1,000,000. The value now consists of 7500 common and 2500 preferred shares, each of $100 par value. The company was organized in 1913 with $25,000 capital. As the result of accumulation of a large surplus during the past six years, an 80 per cent stock dividend recently was declared. Part of the new capital also will be used for plant expansion as needs require. The company some time ago developed a line of electric cranes and hoists, car dumpers and other heavy duty equipment to supplement its structural steel activities. Paul Coddington is president; Samuel C. Coddington, vice-president, and Charles G. Margwarth, secretary and general manager.

□ □ □

Lafayette Steel Products Inc., Lafayette, Ind., has been reorganized with Henry Poor president, L. E. Rush vice president and J. H. Rush secretary. E. J. Smith continues manager and is made treasurer also. The officers and Perry Wright form the board of directors. Metal baskets and automobile trunks are manufactured.

□ □ □

Independent Pneumatic Tool Co., Chicago, will open a branch sales office Aug. 1 at 6200 East Slauson avenue, Los Angeles. Vernon Job, formerly manager of the company's office at San Francisco, will be in charge, assisted by B. J. Herron. Complete stock of electric and pneumatic tools and parts will be carried.

□ □ □

La Salle Steel Co., 844 Rush street, Chicago, has appointed Pfaff & Bathke, Pioneer building, St. Paul, its mill representatives in St. Paul, Minneapolis and nearby territory. The company also recently appointed the Milton Pray Co., its representative on the Pacific coast, with offices in Seattle, Los Angeles and San Francisco.

□ □ □

Western Metal Specialty Co., 1251 Thirtieth street, Milwaukee, specializing in welded sheet metal products, is planning to add to its line a fire extinguisher designed by O. R. Irwin, Milwaukee, formerly associated with the Foamite Childs Corp. The extinguisher is in the form of a hand grenade designed so it can be thrown into the flame, and on explosion spreads the chemical. The Western company also reports an increased demand for gasoline and oil tanks for the tractor trade. Julius J. Goetz is president.

□ □ □

Cartwright Automatic Gear Shift Corp., Indianapolis, has obtained a site for a plant and will start production immediately on an automatic gear shift for Ford automobiles, following with models for other cars.

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Chain Belt Co., Milwaukee, has appointed new distributors. Equipment Corp. of Arizona at Phoenix, Ariz., F. C. Crane Co. at Dallas, Tex., Joe C. Tucker at Morganfield, Ky., Track-Type Tractor & Equipment Co., at Oakland, Calif., will handle the complete line of Rex construction equipment. E. C. Atkins & Co., Memphis, Tenn., have been appointed chain and power transmission representatives. Atlanta, Ga., office of the company has been moved to 407-8 Bona Allen building.

Statistics in Mixed Trend

(*Continued from Page* 28)

10 per cent under comparable period of last year.

Malleable Castings Down

Production of malleable castings in June, as reported to the department of commerce, was at the lowest rate in more than a year, only 40.4 per cent of capacity being in operation. Comparisons are as follows:

	Production, tons	Shipments, tons	Orders booked tons	Per cent cap. operated
June	72,232	72,346	65,315	74.9
(6 mos.)	467,782	463,228	464,548	81.5
July	70,600	69,618	61,358	73.5
Aug.	69,173	69,824	62,541	70.6
Sept.	59,087	62,571	52,647	61.2
Oct.	65,526	58,733	61,164	66.7
Nov.	46,459	46,487	40,145	47.7
Dec.	46,029	47,689	43,475	47.3
(year)	824,856	818,150	785,878	71.3
Jan.	61,381	57,820	58,009	61.6
Feb.	65,942	59,971	61,606	67.4
March	63,464	65,164	60,915	64.6
April	*61,898	*60,749	*54,564	63.1
May	*62,035	*60,884	*54,685	*53.6
June**	39,269	43,739	33,415	40.4
(6 mos.)	353,989	348,327	323,194	58.5

*Revised. **Preliminary.

Steel Barrel Drop Continues

Steel barrels totaling 449,137 were shipped in June, by report of the Steel Barrel Manufacturers' institute, Cleveland. Production at 42.8 per cent of capacity compares with a 44.2 rate in May, when shipment of 502,188 units was recorded.

Stoker Sales Recovering

Sales of mechanical stokers in June showed marked recovery from previous months this year, the total of 145 being the largest since October, 1929. Six-month total is, however, lagging thirty per cent behind first half of 1929. Comparisons by the department of commerce follow:

	Stokers sold	Fire tube boilers	Water tube boilers
1929			
June	203	82	121
Total (6 mos.)	812	291	521
July	186	88	98
August	199	94	105
September	155	71	84
October	178	89	89
November	107	43	64
December	79	30	49
Total (year)	1,716	706	1,010
1930			
January	53	24	29
February	73	26	47
March	89	45	44
April	108	46	62
May	96	41	55
June	145	70	75
Total (6 mos.)	564	252	312

Steel Furniture Lower

Steel furniture and shelving in June reached a low point not matched in 1929 or 1930, as shown by statistics of the department of commerce. Six months of 1930 are materially below the same period of 1929, as the following reveals:

	Business Group		Shelving	
	New orders	Shipments	New orders	Shipments
	(In Dollars, 000 omitted)			
1929				
June	2,553	2,544	958	920
mos.)	17,208	17,186	6,339	6,020
July	2,590	2,658	939	867
Aug.	2,417	2,482	931	889
Sept.	2,294	2,313	879	842
Oct.	2,842	2,983	927	979
Nov.	2,900	2,631	801	859
Dec.	2,583	2,781	735	856
(year)	34,036	34,038	11,554	11,322
1930				
Jan.	2,886	2,890	724	674
Feb.	2,370	2,549	758	682
March	2,627	2,726	839	812
April	2,523	2,427	796	814
May*	2,310	*2,342	725	751
June**	2,005	2,123	698	705
mos.)	14,723	15,059	4,543	4,440

*Revised **Preliminary

June Plate Orders Increase

New orders for fabricated steel plate rose to 45.9 per cent of capacity in June after May's slump to 38 per cent. Half-year totals, by the department of commerce, show orders

(*Concluded on Page* 73)

MIRRORS of MOTORDOM

DETROIT

ALL of the discouragement which a fortnight ago vexed the automotive industry still confronts it this week, plus the added complication that vacation shutdowns in important instances have been extended.

The result is to defer material releases and purchasing scheduled for this week, and to depress production to the lowest point of the year and to a level not plumbed, except for last December, since the close of 1927.

Thirty-five to forty thousand passenger cars and trucks is all the industry will assemble this week, compared with a weekly average of 80,000 in June. Estimates of July production in the United States must be scaled down from 250,000 units to about 200,000, contrasted with an actual output of 335,475 in June.

Can Auto Industry Give Business Situation Impetus?

Nevertheless, Detroit is more optimistic and, considering the circumstances, that is saying much. It is not rampantly optimistic, but sentiment is notably improved and there is an increasing conviction that the last vestige of weakness in the automotive situation is being shaken out.

Deferment of production one week by some manufacturers, while an evidence of softness in the retail situation, reduces factory and dealer stocks of new cars the farther and insures a steadier rate of operations once assembly lines again move.

There is a growing feeling that the industry is more fit and has worked off its last trace of fat in the manufacturing situation, although a little fortunately remains in the treasuries. More than the industry openly admits, it has stripped itself of surplus management and labor, and by various devices has scaled down its overhead and its labor costs.

Many recall that after the depression of 1921 the automotive industry was first to come back. Slack purchasing in the first half year has backed up considerable retail demand, it is believed, and necessary replacements are piling up.

Credit continues comparatively easy and the urge to "wear off the new" is as irrestible as ever. When labor is again fully employed, will it not rush to extract a down-payment from the first pay envelope? Detroit believes so and hence looks for retail buying, once it starts, to come back with a bang.

There is some opinion that the automotive industry itself could supply the impetus. Convinced that the general business situation was turning, the industry could step up production smartly, expand its own expenditures for labor and material and generate a state of confidence that would sweep all doubt before it and start all other industry on the high road again.

◆

Ford, who went down July 11 to reopen July 28, made a last-minute decision to defer resumption until next Monday, Aug. 4. Delay in completing a water intake leading from the Detroit river was a factor, but failure of cars to move off dealers' floors with expected rapidity contributed.

The extra week of idleness keeps in the Ford till about $4,000,000 that would have been paid out to labor, making the total wage saving of the three-week shutdown $12,000,000. This week's schedule having been based on 7000 units daily, there is a loss of 35,000 units in production

All told, Ford worked only eight days in July. Provided he reopens Aug. 4 as now contemplated, he will have 20 working days in August—a powerful reason why August output of cars and trucks by the entire industry will certainly show improvement over July.

While the changes in Ford design do not constitute a model change as the industry knows it, the revisions nevertheless are important. For some weeks a new carburetor, permitting closer throttling of the engine and improving its idling qualities, has been installed on units assembled at Fordson; this carburetor will be made standard at all assembly plants.

The new radiator shell, to be made from cold-rolled rustless strip instead of sheet, will give the impression of being narrower, the hood consequently appearing longer. Half of the shells will be fabricated by the Motor Products Corp., which has perfected a machine which in effect rolls the shell, whereas with the use of sheets the shell was formed. The Motor Products machine will be utilized at Fordson, also.

As previously noted, there will be slight changes in the mechanical brake hookup and in the transmission. Shifting will be eased by the new transmission. It is said by some that it will virtually be possible to shift from second to high, and vice versa, without using the clutch, but this is not guaranteed. An Indianapolis manufacturer is now offering a Ford transmission which by-passes the clutch.

Look to Radical Change in Coming Chevrolet Model

Chevrolet's operations vary according to departments, some having large banks built up, but the assembly rate is approximately 3700 to 3900 a day, four days a week. This indicates a probable July production of about 50,000 units.

Whether the 1931 Chevrolet is introduced in the late fall or is held back, as usual, until shortly before January show time apparently depends upon the vigor of this fall's retail market.

Dies and patterns are being completed, body design has been worked

out, and the new line should be ready for production by late fall. Reports persist that Chevrolet will do something radical to widen the gap between it and Ford. Certainly the new line will be longer. Plymouth, meanwhile, by introducing a 2-door sedan at $565 is edging farther into the Ford field.

New Models Hold Interest in Month of Vacations

Buick, as long forecast, has three straight eighths now on the market. There are three sizes of engines—the 8-50 replacing the unlamented Marquette, and the 8-70 and 8-80 replacing the orthodox Buick lines. The 8-90 series is powered by the 8-80 engine.

In body design there are few radical departures. The engines, in a broad way, are enlargements by the addition of two cylinders to the comparable 1929 models. A one-piece pressed steel rear axle housing is featured; also the synchro-mesh transmission, handed down from Cadillac to La Salle and now to Buick.

Current production is approximately 800 a day, and if the new line goes over as expected this rate will be maintained to Nov. 1. Scrap lists offered for August shipment indicate oldtime activity at Flint. Buick's capacity is 1100 units a day, but for the period of the 1929 model the average has not been much over 350.

◆

Chrysler, whose new eights were introduced only one week before Buick's by what may be more than a coincidence, is assembling about 250 units a day, five days a week. It has its dealers well stocked and is now awaiting the reaction of the public.

The Chrysler subsidiaries continue in their vacation depression. Dodge recently has been averaging about two days a week in the passenger car and three days a week in the truck division. The passenger car daily rate has been about 300. De Soto has been running three days a week, 200 per day. Plymouth has been doing 400 a day, five days a week.

Austin, assembling its "bantam" car at Butler, Pa., has put out approximately 7500 since starting operations in June. It has not increased its original orders for 15,000 of the principal parts.

◆

With the new Buicks and Chryslers out, the next candidates for new models are Cadillac-LaSalle, Packard and Reo.

September is believed the month for the new Cadillac-La Salle line. The Cadillac sixteen probably will go through this year unchanged. Though officially denied—and official denials are frequently the only recourse—a Cadillac twelve still is being talked in Detroit. The new La Salle, it is said, will be smaller and lower priced.

Reo's new job will be an eight, probably a large one. Packard, of course, will continue the eight in the standard series, with more changes in motor efficiency than in body.

◆

Willys-Overland shows slight improvement, at 400 a day, four days a week. Olds continues at 300 a day, three days. Hupp goes down for the first half of August.

Graham and Packard are scheduled to resume Aug. 4, the date now set for Ford. Durant also has extended his vacation an extra week, to Aug. 4. There is some doubt whether Pontiac will not extend its shutdown one week from Aug. 4.

Hudson-Essex, still the enigma, is back in limited production. Its operations are closely guarded, but the impression is abroad that revisions in the Hudson line at least are under way. Reported changes increase the size and weight of bodies.

Kissel will bring out a frontwheel drive straight eight called the Kissel-Ruxton.

◆

Considering the shutdowns and extensions which have carried July production to such a low point, August is certain to reveal improvement. More factors in the industry now believe September will show further betterment, although this is dependent more than in August upon the general business situation. Beyond the third quarter few are willing to look, but sentiment for the last half as a whole is decidedly better in the past two weeks.

Manufacturers Consider Retail, Finance Questions

Out of the disturbed retail situation which has prevailed much of the year may come an overturn in the merchandising of automobiles, perhaps even factory distribution.

Time was when many manufacturers disposed of their entire production to intermediate distributors, who in turn set up dealer organizations. Now, practically all manufacturers do their own wholesaling.

Up to this year, the great majority of producers required cash at the end of their assembly lines, and got it, in contrast with the strenuous efforts to promote retail sales on long-term credits.

But were dealers today compelled to put up cash their show rooms would be empty. A surprising number of display cars now are put on dealers' floors on consignment. Some producers take as little as $100 per car, plus 1 per cent monthly on the unpaid balance. One medium-price maker asks only $462 down for five cars. Financing of dealers' cars is an operation wholly independent of the purchaser's arrangements.

◆

From selling cars on easy terms to dealers to dealing directly with the ultimate buyer appears but a step, and one which some believe necessary. Advertising and reputation, not personal sales effort, win orders. Trade-in allowances being equal, most buyers know in advance which car they prefer.

By setting up their own sales rooms, reducing the number of salesmen and making them virtual order-takers, it is believed retail prices could be so reduced—perhaps 30 per cent— that business would be greatly stimulated. To cite only two instances of manufacturers edging into the retail field, Lincoln is doing its own selling in Detroit and Cadillac in Cleveland.

Through its General Motors Holding Corp., General Motors already has a financial stake in the business of more than 50 of its retail dealers and has about $1,000,000 invested with them.

Hudson-Essex Steps Into Servicing Field

It may or may not be significant, but Hudson-Essex is experimenting with a new service plant at Detroit. All Hudson-Essex owners in Detroit are being telephoned personally by the factory and advised of a new factory service station, centrally located.

To this station Hudson-Essex owners are invited to bring their car for free inspection and checking of timing, brakes and other mechanical parts. Chassis lubrication will be done free at stated intervals; the only charge is for crankcase oil. Any parts requiring replacement will be furnished for the factory cost plus a nominal labor charge.

Hudson-Essex expects the cost to be large, but to pay its way in good will. To the extent the owner utilizes this central service the retail distributor is deprived of business, and the factory assumes a closer relationship to the owner. Whether the plan will be extended to other cities is not known.

◆

Great Lakes Steel Corp., completing its new mill at Ecorse, just south of Detroit, is now drying out two of its six 150-ton open-hearth steel furnaces. The first heat probably will be tapped early in September. Already a large accumulation of scrap has been thrown down.

The blooming mill, billet mill and sheet bar mill are ready for service. The four high 33-inch mill nears completion.

EDITORIAL

Industry More Alert To New Markets for Steel

ONE of the gratifying aspects of the present period of diminished activity is the continued interest maintained by the more progressive steel companies in developing new markets. While the officers of these producing companies realize full well that worthwhile returns from present market studies cannot be immediate, nevertheless they are displaying more enthusiasm in the subject than ever before.

This is especially significant in the light of the general apathy toward new outlets for steel which existed only a few years ago. When the steel house was proposed in a serious way in 1927, only a few of the steelmakers evinced more than casual interest in its potentialities. Today almost every large steel producer is studying the problem. Several of the largest companies have gathered elaborate data and apparently are preparing to actively engage in developing this market as soon as the building situation improves sufficiently to justify it.

When the so-called battledeck floor type of construction was first proposed by Lee H. Miller, the producers of steel plates, who were bound to gain if the idea proved feasible, were not noticeably enthusiastic over its possibilities. Now several platemakers are studying the subject carefully. A number of structures embodying this type of floor design have been erected and before long valuable experience will have been accumulated. In the meantime, the problem of welding involved in the battledeck floor needs intensive study.

A Million-Ton Market in Barns

The merits of steel barns have been recognized for a number of years, but only recently have producers of light shapes and galvanized sheets devoted serious attention to this waiting market. The amount of steel that could be consumed in barns, if a real campaign were inaugurated, probably would exceed 1,000,000 tons annually. Fortunately some of the sheetmakers, through their association, now are alive to the possibilities of this market and several producers of shapes have surveyed the field, preparatory to entering it more actively.

Manufacturers of sheets for metal furniture from time to time have flirted with the idea that many household articles now made of wood might be fabricated of steel. Some progress has been made, particularly in radiator covers, kitchen cabinets, tables, chairs, etc. It is reported that in Germany steel wardrobes, dressing tables, kitchen cabinets, sinks, washstands and other similar articles are made in matched units and sold for use in apartments where space is at a premium. The idea may be worth the attention of American manufacturers.

Perhaps the best indication that steelmakers are watching new markets more closely is found in their zeal to establish themselves as producers of alloy steels and irons. With only a few exceptions, the leading companies now are making corrosion resisting alloys or are rolling or fabricating it from material purchased from others. It is doubtful whether the annals of the American steel industry have ever recorded such widespread participation in a relatively new product. The present drive is especially noteworthy because it has started before the market for corrosion-resistant material is fully proved. It is unusual to witness a score or more important companies all engaged in developing markets and all bearing a share of the high cost of pioneering.

Changed Attitude Is Noticeable

The foregoing illustrations are sufficient to indicate that the steel industry as a whole is much more alert in regard to future markets for steel than it has been in the past. The willingness to survey possible new uses for steel is more apparent. Only a few years ago, if an inquiring editor asked a high official of a steel company what he thought of a certain new market, the invariable answer was "Oh, yes, we've looked into it, but there's nothing to it." Today the reply is likely to be "Yes, we've made a careful study of it and it looks as if we may develop some business there."

This contrast in attitude is quite general, but it is especially marked in the United States Steel Corp. Subsidiaries of this group always have investigated the possibilities in new markets, but for many years even the fact that such studies were made was not generally known outside of Corporation circles. Today U. S. Steel's activities are not so tightly hidden under a bushel, and its co-operation with outside agencies in the promotion of market research, while conducted quietly, is nevertheless apparent and, we believe, highly appreciated.

Altogether the new attitude throughout the industry is admirable. It augurs well for the intelligent promotion of steel in the future.

How Industry Is Greeting STEEL

Excerpts from a few of the hundreds of telegrams and letters received after the July 3 issue of STEEL had been distributed to subscribers

Protests Against Arrangement of Ads

"The name and type easily come up to my expectations. However, as one who is still interested in advertising I should like to protest against the indiscriminate arrangement of the advertising and editorial matter."

"Much Better Than It Was Before"

"We have been going over recent copies of your publication STEEL, formerly *Iron Trade Review*, and we wish to congratulate you on the very decided improvement in this magazine.

"The new name, the changed make-up—in fact, the magazine as a whole—is very much better than it was before, and you are to be complimented on the progressive step you have taken."

A Compliment in Verse

Iron Trade Review
Has made some changes new;
It's name is changed,
Ads re-arranged
And type is larger, too.

As STEEL, it now is known
A peer, it stands-alone
Before the trade,
Where it has made
It's mark, and great has grown.

No paper more replete
With items on each sheet,
Of interest,
It's stood the test,
And ne'er has known defeat.

A welcome guest each week:
Unobtrusive, yet not meek.
All full of news
And market views;
That's why it's at the peak.

A. R. C.

"Looks Like a Master Stroke"

"One of the most interesting developments . . . was *Iron Trade Review's* appearance as STEEL. It looks to us like a master stroke and we hope it will carry it to new heights."

"This Is a Strategic Move"

"I have just looked through the interesting announcement regarding the change of name of the *Iron Trade Review*. It seems to me that this is a strategic move on the part of your company, which should prove more and more beneficial from year to year. Like any radical change it may have its temporary drawbacks, but I think it rids you of a competitive handicap in an adroit way."

"A New Note in Business Paper Publishing"

"I have before me a copy of the respected *Iron Trade Review* in its new dress and wearing its new significant title, STEEL.

"Not only in the choice of modern name, but also in your modern departure from the beaten path of business paper make-up, you are sounding a new note in business paper publishing.

"Your readers will surely respond to the broader scope that you are to cover under the appropriate title STEEL, and your advertisers must surely sense both the mechanical and advertising advantages of your aggressive policy."

"I wish to congratulate you on the fine appearance of your new paper which now goes under the name of STEEL.

"The information, both current and historical, which has come to us through the pages of your publications for many years has been of inestimable benefit, and you deserve the congratulations of all of us in the iron and steel business in your determination to keep one step ahead always in your publications."

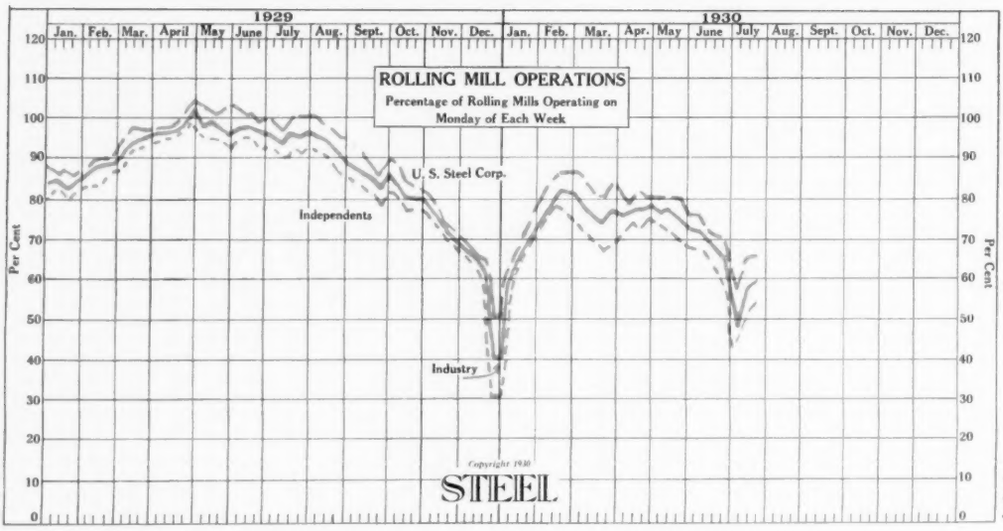
Why Was It Not Done Before?

"I want to congratulate you on the change of your name to STEEL. This, to me, is a stroke of genius and one of those things that is such a good move, the thought occurs as to why it was not done before. It is seldom that a change of name accomplishes very much but I am sure that in this case it is a large, forward step."

* * *

"Everyone is to be congratulated who had anything to do with the new make-up. It is a fine piece of work."

THE BUSINESS TREND


1929
1930
Jan. Feb. Mar. April May June July Aug. Sept. Oct. Nov. Dec.
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
ROLLING MILL OPERATIONS
Percentage of Rolling Mills Operating on Monday of Each Week
U. S. Steel Corp.
Independents
Industry
Per Cent
120 110 100 90 80 70 60 50 40 30 20 10 0
Copyright 1930
STEEL

Industry 1929	
July 22	95
July 15	95
July 8	93

Industry 1930	
July 21	58
July 14	57
July 7	48

Tone Is Brighter as Business Nears New Month

AS INDUSTRY approaches the beginning of a new month, the tone of business is appreciably brighter than it was at the threshold of July. The change is largely one of sentiment, although if one looks closely into the statistical record of business, he will find an occasional hint of the better times to come.

True, these favorable indicators are pitifully weak in the face of so many barometers which still reflect the gloomy aspects of business. But weak as they are, they furnish a spark of hope to those who have been waiting eagerly for some sign of business recovery. The first suggestion of a turning point came in the last report of the index of machine tool orders, in which the index of the bookings of the smaller and larger companies actually showed an increase, while that of orders of the companies of medium size continued downward. The total showing was such that it is reasonable to expect an upturn of the general index in July.

Foundry Equipment and Machine Tool Orders Show Improvement

And now the figures for bookings of foundry equipment for June are announced, showing a sharp increase over May. Coupled with the anticipated improvement in machine tool orders, this favorable report is significant. Builders of certain types of heavy equipment, particularly for rolling mills, have enjoyed a fair volume of business throughout the dull period. Manufacturers of cranes and conveying equipment, on the other hand, have not been uniformly blessed with contracts. If the upturn in the two indices really forecasts a revival of the equipment business, it will mean welcome relief to many companies which are hungry for business.

Early in July the steel industry reduced operations to an extremely low point, from which there has been a moderate recovery. This is shown in the new chart presented on this page, which is compiled from the approximate rate of rolling mill operations at the first of each week. The percentage shown is based on the number of units operating in relation to the total number of units available.

Operations Gain Slowly from Low Point in Early July

Steel ingot and pig iron production probably will show further declines for July. In the case of the blast furnaces, this would be a favorable indication, because there is a rather large supply of iron in makers' yards. Stocks of finished steel in consumers' hands are believed to be very low, and therefore any improvement in business in industry in general should be reflected promptly in the rate of mill operations and in steel ingot output.

An increased demand for finished steel should appear soon. Although some of the automobile companies are extending their involuntary vacations longer than first intended, they must soon order steel for fall requirements. Some buying by railroads is anticipated, which with the fair volume of structurals and plates now in demand will bring relief to starved mills.

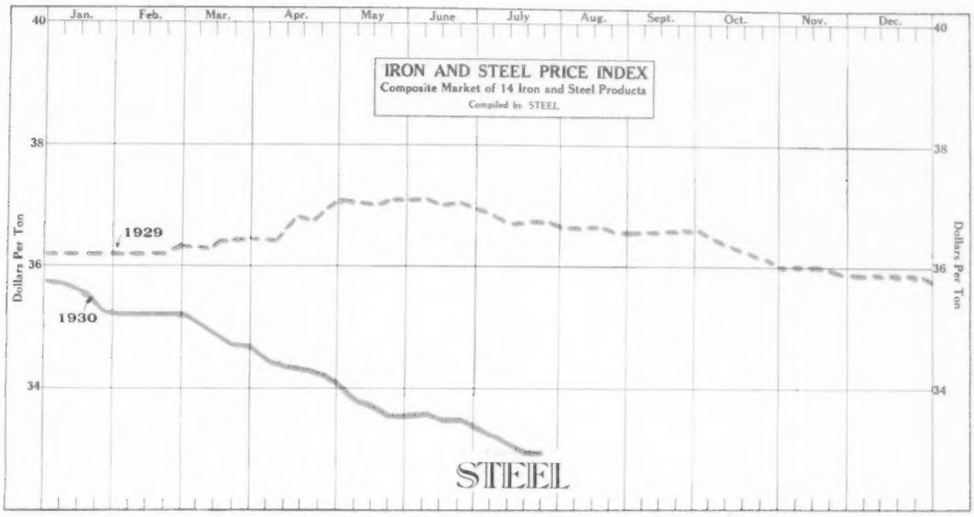
The price situation still is uncertain. The index of building costs is lower and advice to the public to build now is emanating from high authority. Most of the commodity price indices are lower, including STEEL's composite, which last week dropped 4 cents to $33.14. The turning point in steel and iron prices is not yet in sight, although it may not be far off.

Weekly Figures

July 23	$33.14
July 16	$33.18
July 9	$33.32
July 2	33.34

Monthly Averages

June, 1930	$33.53
May, 1930	33.73
April, 1930	34.44
June, 1929	36.99



Composite of Steel and Iron Prices Declines Moderately

In uniformity with commodity prices generally, STEEL's composite of 14 quotations of steel and iron products last week declined slightly to $33.14. The drop was only 4 cents, which is moderate in comparison with downward revisions of some of the preceding weeks. Lack of active demand for certain pig irons and finished steel items contributes somewhat to price uncertainty, and until quotations are more thoroughly tested by transactions involving fair tonnages it will be difficult to determine the real tone of the market. Certain prices seem doomed to go slightly lower, but in a few cases elements of strength are appearing.

Index of Foundry Equipment Orders Rises 10 Per Cent in June

The index of gross orders for foundry equipment, as compiled by the Foundry Equipment Manufacturers' association, rose 10.1 per cent in June to 102.1 from May's level of 92.7. This is the first monthly increase since February and probably represents the beginning of a return to higher, more stable levels. At the present level gross orders are 42.4 per cent below the corresponding period of 1929 and 47 per cent below that of 1928. Since foundry equipment orders fluctuate rather sharply, at least a fair recovery may be expected to take place with the anticipated fall upturn in business. The outlook for equipment is improved.

	1929	1930
Jan.	180.5	160.1
Feb.	197.0	196.4
Mar.	209.4	164.1
Apr.	172.5	122.8
May	177.7	92.7
June	177.3	102.1

The World's Greatest Metal Experts Will Describe this Year's . . . . .

METAL PROGRESS
during
NATIONAL METAL CONGRESS

FROM England, France, Germany, Japan, Italy, China, Russia, Switzerland and Canada came the leading experts of the metal world to attend last year's National Metal Congress and Exposition. They will come again this year and together with the most famous of the leaders of our own metal industries, will participate in the discussion of over 100 subjects during the technical and practical sessions. Not in a dozen of the greatest educational institutions of the world are as many world-renowned scientists gathered together to bring to you the most important advances in the production, selection, fabrication, inspection, treatment, welding and application of metals. And in addition the exhibits of hundreds of manufacturers, many of them in actual operation, will give you an opportunity to see and study the processes and methods discussed in the technical and practical sessions. National Metal Congress and

NATIONAL METAL EXPOSITION
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IRON AND STEEL DIVISION A S M E

AMERICAN SOCIETY FOR STEEL TREATING

AMERICAN WELDING SOCIETY

INSTITUTE OF METALS OF THE A I M E

IRON AND STEEL DIVISION A I M E

MACHINE SHOP PRACTICE DIVISION A S M E

All Costs

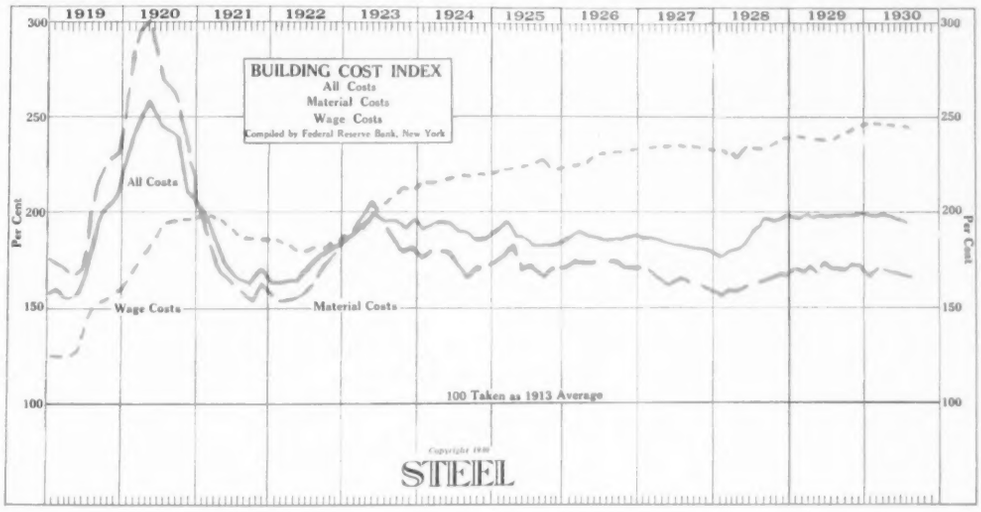
June, 1930	190
May, 1930	193
June, 1929	194

Material Costs

June, 1930	155
May, 1930	160
June, 1929	166

Wage Cuts

June, 1930	243
May, 1930	243
June, 1929	235



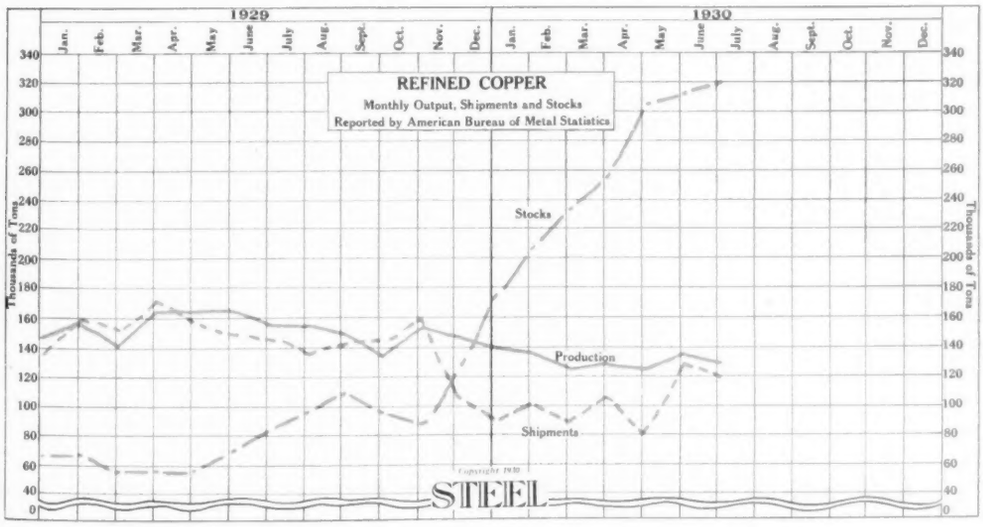
Building Cost Index Declines; Wage Costs Hold

Building construction costs continue their downward trend from the peak reached last September. The reduction, which has been rather haltingly effected since September, now bids to become more definite in its decline. In May all costs dropped 2 points to 193 while in June the decline was increased to 3 points, reducing the index to 190. Material likewise has been dropping. Each month since January has found a decrease, bringing the June figure to 155 from the 166 level of January. Wages, on the other hand, have maintained the level reached last September. In May the wage index was actually increased from 242, the September index, to 243, which also was maintained in June.

Copper Stocks Increase in Face of Curtailed Production

Copper stocks continued its advance to new high records. In June stocks increased 8,116 tons, bringing the total on hand in North and South America to 316,762 tons. This increase has been in the face of sharply curtailed production.

June output of copper amounted to 124,821 tons compared to 132,183 for May, which is a reduction of 5.6 per cent. Shipments have fallen off at a greater rate than production has been reduced, which accounts for the increase of stocks in the face of lower production. Because consumers are well supplied for several months ahead, there is at present no active demand or prospect for an appreciable change until after business recovery has started.



Stocks

June, 1930	316,762
May, 1930	308,646
June, 1929	83,140

Production

June, 1930	124,821
May, 1930	132,183
June, 1929	156,447

Shipments

June, 1930	116,705
May, 1930	124,875
June, 1929	143,719

Information

General

The National Metal Congress (American Society for Steel Treating Exposition) will be held at the Stevens Hotel, Chicago, September 22-26. This year two more groups of metal experts will participate making seven technical societies represented:

American Society for Steel Treating
American Welding Society
Iron & Steel Division, A. S. M. E.
Machine Shop Section, A. S. M. E.
Iron & Steel Division, A. I. M. & M. E.
Institute of Metal Division, A. I. M. & M. E.
International Railroad
Blacksmiths Association

In addition to the splendid program provided a new feature will be introduced—a conference on sales methods and problems.

Naturally STEEL will play a prominent part in co-operating to make this Twelfth Annual Metal Congress a success. The issue of September 11 will carry the complete advance details of exposition and convention—program, list of exhibitors and location of exhibits, Chicago information—everything of interest to those going to Chicago. This issue will be in the hands of readers 10 days before the convention opens—ample time to make plans.

This issue will bring the convention and exposition to those who cannot attend.

Publication

A feature of the September 11 issue of STEEL will be a combined editorial and advertising section devoted to the same interests as the National Metal Congress.

Those advertisers desirous of appealing to these same interests will find unusual value in being properly represented in the special section of this issue.

This interest value is not confined to the readers of STEEL who attend the Chicago Exposition, but extends in even larger measure to those similarly interested who do not attend, thereby depending more largely upon STEEL to bring the Exposition to them.

COLOR

Two colors will be used—red and black—printed on India tint coated stock.

RATE

Including color and insert position—$150 a page for regular advertisers—$175 per page one time.

CLOSING DATES

Final forms close Tuesday, September 2. Reservation and copy requiring composition should be in Cleveland not later than Monday, August 25.

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STEEL
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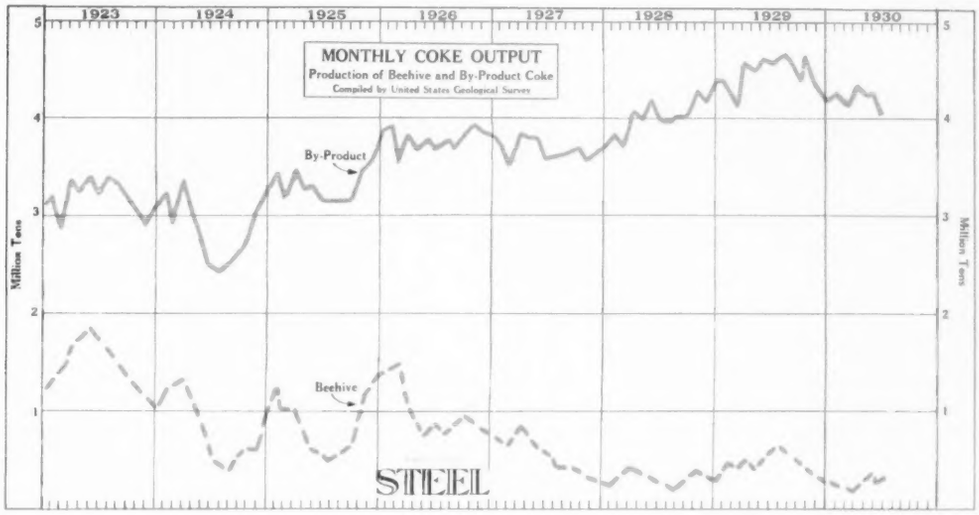


By-Product

June, 1930	3,953,846
May, 1930	4,265,528
June, 1929	4,509,564

Beehive

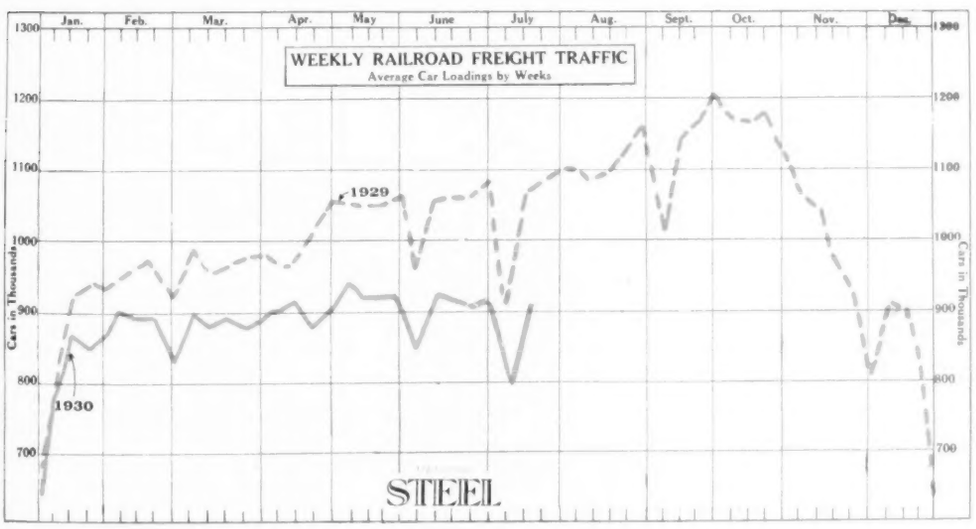
June, 1930	261,600
May, 1930	241,100
June, 1929	602,400

Production of Coke in June Dips To New Low Point

Total coke production in June declined again to make another new low level for the year. From 4,506,628 tons in May, total production dropped to 4,215,446 tons. By-product coke output fell from 4,265,528 to 3,953,846 tons while beehive coke rose from 241,100 to 261,600 tons. In June the decline of by-product amounted to 7.3 per cent from the previous month and 12.3 per cent from one year ago. Beehive, on the other hand, was 7.9 per cent below the previous month and 56.6 per cent below a year ago. The daily average for total production declined from 146,528 tons in May to 142,259 tons in June.

Freight Car Loadings for July 12 Show Seasonal Increase

Freight car loadings for the week ending July 12 rose in keeping with the usual seasonal advance after the July holiday. The increase over the previous week totaled 123,844 cars, or 13.4 per cent, which compares with corresponding advances of 14.3 per cent in 1929 and 17 per cent in 1928. Loadings for July 12 are, however, 14.1 per cent below the similar week of 1929 and 10.6 per cent below that of 1928. For the week car loadings totaled 915,985 cars. Should freight traffic continue to show average seasonal improvement, it is not unlikely that loadings will cross the million mark before many weeks.

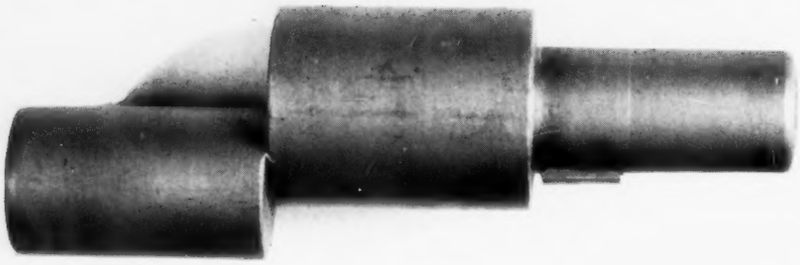


1930

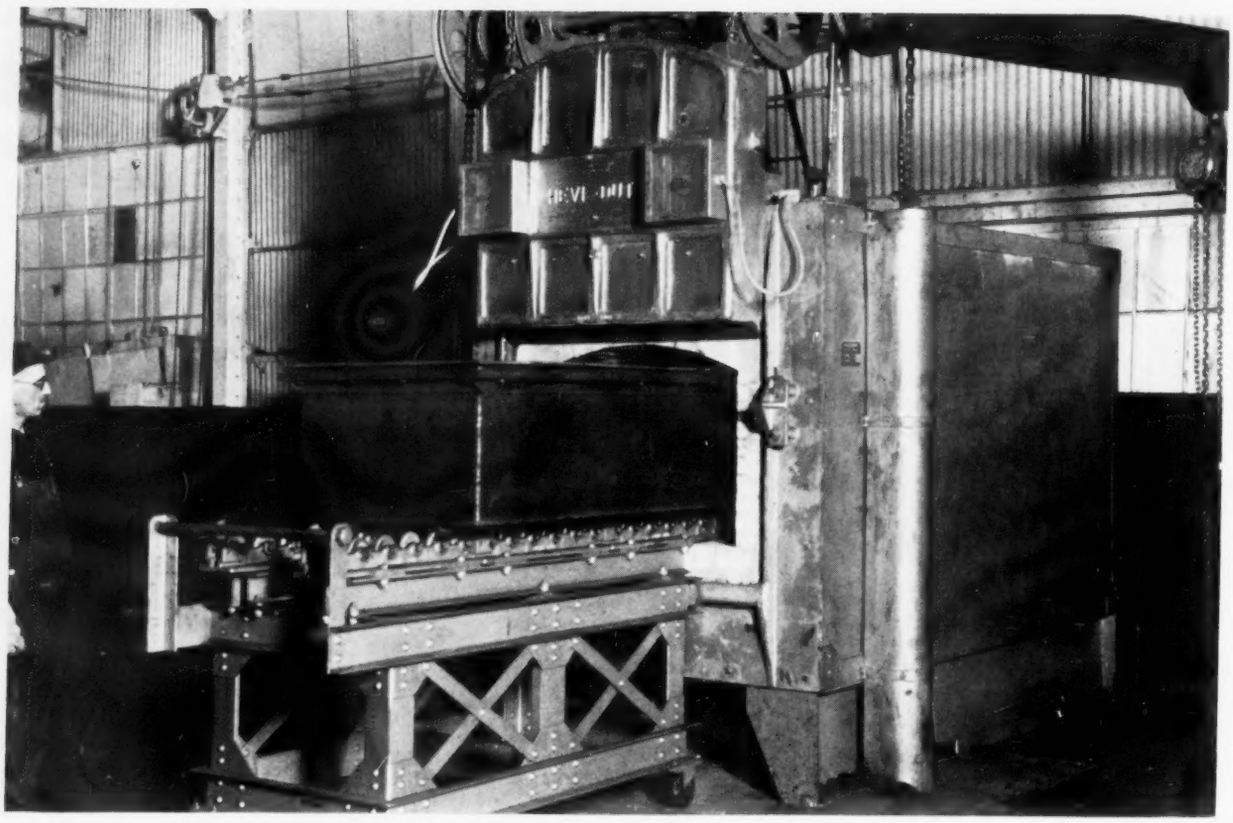
July 12	915,985
July 5	792,141
June 28	936,848
June 21	920,859
June 14	927,754
June 7	935,647

1929

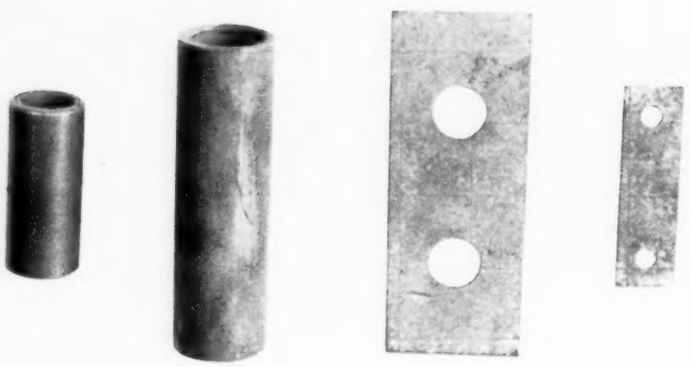
July 12	1,066,414
July 5	911,143
June 28	1,096,569
June 21	1,069,874
June 14	1,071,245
June 7	1,055,768

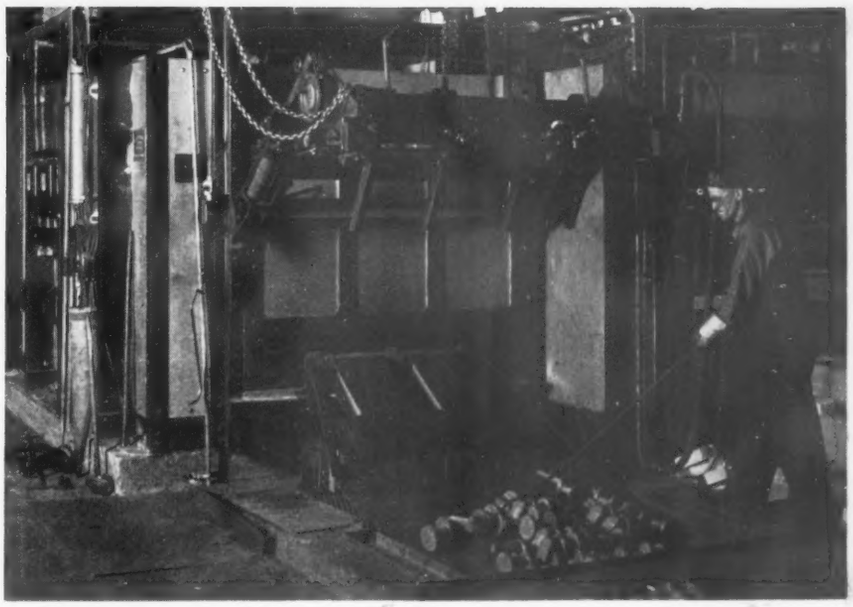


FORGED and nitrided Nitralloy eccentric shaft for gasoline pump, 5 inches in length. Tests showed the equivalent of 7 years' service with minimum wear.



ABOVE is shown the heavy-duty nitriding furnace used for ammonia hardening Nitralloy steel parts. Electric heating elements are provided on all six sides of the interior. At the right are two tubular parts of the nitrided steel for aircraft use and two stampings of the same material, to be used as blades in a hammer mill.





DISCHARGE end of the drawing furnace in which Nitralloy forgings are drawn after being heated and quenched. The furnace is heated electrically and forgings carried through the interior by a motor driven pusher. Small parts are placed on trays, which are tipped by an air-operated dumper at the discharge end

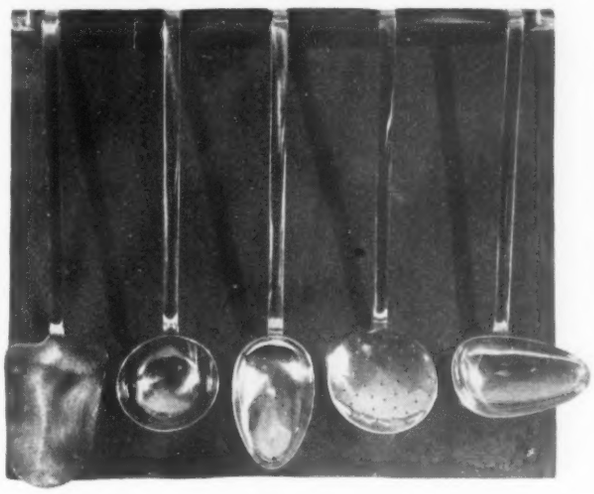
Stamping and Forging Special Steels

Large Ohio Plant Sets Aside Division for Experimental and Production Work on Corrosion-Resistant and Nitrided Steels

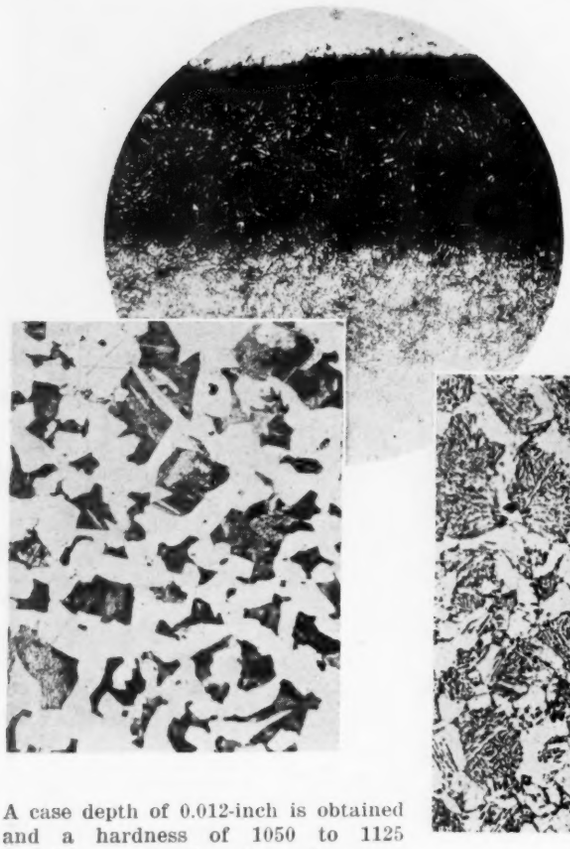
BY A. H. ALLEN
Editorial Representative, STEEL

PIONEERING in the application of a new development is a costly undertaking, one which presents many difficulties and much wasted endeavor; nevertheless the experience often proves extremely profitable to the pioneer and at the same time contributes to the onward march of industrial progress. Transue & Williams Steel Forging Corp., Alliance, O., among others, has been engaged for some time in this type of experimental stamping and forging work on the two new Krupp steels, Nitralloy and Nirosta KA2. Marked success has attended efforts in the development work on these new steels. Nitralloy steels, comprising a series with different carbon contents, may be case hardened at low temperatures with ammonia gas to produce a super hard surface without material deformation or distortion. Two units of the series, Nitralloy G and Nitralloy H, have analyses as shown in an accompanying table.

The G alloy is characterized by a somewhat higher tensile strength. The nitriding process applied to these steels imparts a hardness of the order of 1000-1150 brinell, as extrapolated from the scratch test. The case retains its hardness when reheated, remaining file hard up to 1200 degrees Fahr. Coupled with the extreme hardness is good resistance to corrosion, giving the material a double value. The Transue & Williams Steel Forging Corp. has done work with both Nitralloy G and Nitralloy H. Stampings of the H alloy include a number of small hammer blades for hammer mills, these being made from annealed sheets 0.050-inch thick. The manufacturing sequence is blanking, punching, grinding and then nitriding for 10 hours.



Corrosion-resisting kitchen ware and kitchen utensils such as shown are stamped products



PHOTOMICROGRAPHS of nitrided steel; lower left, forged Nitralloy, X200; circle, the nitrided case, X100; lower right, annealed Nitralloy, X200

A case depth of 0.012-inch is obtained and a hardness of 1050 to 1125 brinell. In service, these hammers or blades, shown in an accompanying illustration, are fastened to a central shaft which is rotated and the whirling blades break up whatever material is put into the mill, such as, beans, corn, grain, etc.

Nitriding Cycle Varies

The nitriding temperature is 950 to 1000 degrees Fahr., and the nitriding time or cycle is governed by the time from which the set temperature has been reached until the furnace is shut off. This cycle varies anywhere from 10 to 90 hours, the determining factors being the amount of work to be nitrided, the depth of case desired and dissociation of the ammonia gas. Dissociation is maintained between 15 and 30 per cent and is watched closely by means of a dissociation pipette attached to the gas exhaust pipe of the furnace.

The present nitriding furnace operated by the company has elements on all six sides, is 84 inches long, 36 inches wide, 24 inches high and contains a box 72 inches long, 30 inches wide and 20 inches deep which accommodates 2000-3000 pounds of material. The furnace will heat a full load from cold up to heat in 7 hours. Present plans are for the installation of a continuous nitriding unit which will consist of two nitriding pots with 5000-pound capacity and a rolling type furnace which may be rolled alternately from one pot to the other.

Some Nitralloy forgings have been made, these of Nitralloy G, including a number of crankshafts for truck motors and other miscellaneous forgings. An essential factor in obtaining good forgings of Nitralloy is to give the metal a good soak, the temperature being 2225 to 2275 degrees Fahr.

Recently some forged Nitralloy crankshafts were subjected to rather unusual tests after being nitrided. The center bearing of one was thrown out of line and the shaft rotated. After 900 hours of test the nitrided shaft was examined and no fatigue strains or cracks were found. A similar test conducted on an ordinary type of shaft gave only 70 hours on this test run before breaking; thus the nitrided shaft showed something over 1280 per cent increased service.

A typical Nitralloy G forging is a small eccentric shaft for a gasoline pump, shown in an accompanying il-

Nitralloy Analyses

	Nitralloy G Per cent	Nitralloy H Per cent
Carbon	0.36	0.23
Manganese	0.51	0.51
Silicon	0.27	0.20
Aluminum	1.23	1.24
Chromium	1.49	1.58
Sulphur	0.010	0.011
Phosphorus	0.013	0.011
Molybdenum	0.18	0.20

General view looking west in the No. 3 hammer shop of the forging department where small Nirosta and Nitralloy forgings are made. Hammers are steam operated ranging from 1000 to 6000 pounds in capacity

Some of the presses for light stamping and punching operations in the stamping division. The endless conveyor chain handles material between the various forming operations

lustration. This small forging was made on a 2000-pound hammer from 1⅛-inch round bar stock; the finished forging is about 5 inches long and has a nitrided case varying from 0.020 to 0.025-inch in depth. The procedure after forging this small shaft, in which the only characteristic sought was a hard corrosion-resistant case, was to anneal at 1550 degrees Fahr., rough and finish machine and then nitride.

This treatment, of course, produces a soft core in the material and if a hard or tough core is desired a different treatment must be pursued. In this case, following the forging treatment, normalizing and air cooling is practiced, the normalizing temperature being 1700 degree Fahr. The sequence then is to rough machine, quench and draw, finish machine or grind and lastly nitride. In the finish machining treatment at least 0.010 to 0.015-inch must be removed from the surface to insure complete removal of the decarburized layer of metal. Accompanying photomicrographs show forged, aneal-ed and nitrided Nitralloy G, the forged and annealed specimens being at 200-diameters magnification while the nitrided specimen is 100 diameters. Depth of case of the nitrided sample is 0.015-inch.

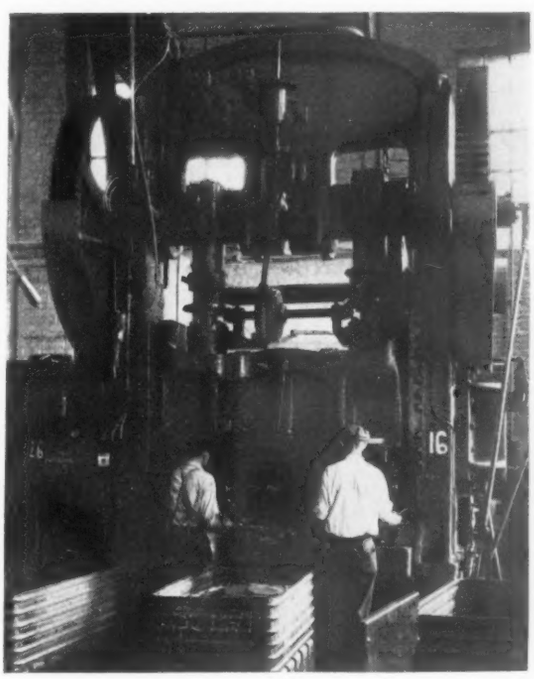
In testing the above mentioned gasoline pump eccentric shaft it was rotated on a cast iron bearing and found to show wear of only 0.0005-inch after having pumped 1,500,000 gallons of gasoline. This is equivalent to seven years' service under ordinary requirements. Forging work on Nitralloy is done in the No. 3 forge shop where hammers are all steam operated.

While work on the Nitralloy steels is still considered of an elemental and experimental nature, sufficient progress has been made to indicate that the company's efforts have been well spent. It is expected that production work on the steels will be undertaken in the not far distant future.

The second of the two steels, Nirosta, is of the 18-8 chrome-nickel variety and is highly resistant to corrosion and retains tensile strength at elevated temperatures. Typical analysis is as follows:

	Per cent
Carbon	under 0.15
Manganese	under 0.50
Silicon	under 0.75
Chromium	16.5-19.5
Nickel	7.0-10.0
Phosphorus	under 0.025
Sulphur	under 0.025

By careful control of coldworking treatments a wide range of physical properties and hardness can be obtained. Tensile strength at room temperature of an annealed Nirosta bar varies from 85,000 to 95,000 pounds per square inch. Extensive manufacture and fabrication of stampings and forgings of Nirosta steel is being undertaken by the Transue & Williams corporation and special equipment has been designed and laid out in manner to suit production requirements. The drop forging department has found many successful applications for forgings of Nirosta metal. These are used mainly in the oil refining industry while many new ideas are being developed constantly for forgings where there is a necessity for high temperature and corrosion-resistant metal. Ample facilities are provided for the proper heating and fabrication of metal, which include furnaces for preheating and separate furnaces for heating and forging operations. The double furnace installation allows a full soaking at low temperature and a rapid heating in the higher temperature furnace without the necessity of any soaking at the higher temperature and thus keeping a de-



Double-crank press of 250-tons capacity for forming corrosion-resisting steel and carbon steel stampings

sirable grain refinement, eliminating a large grain growth and presenting a forging of uniform homogeneity. These furnaces are provided with automatic temperature control and are built in a semimuffle design which prevents the flame from striking or impinging on the forging bar. The forging temperature is from 2225 to 2250 degrees Fahr. If the forging heat falls below 1800 degrees the metal must be reheated before being struck.

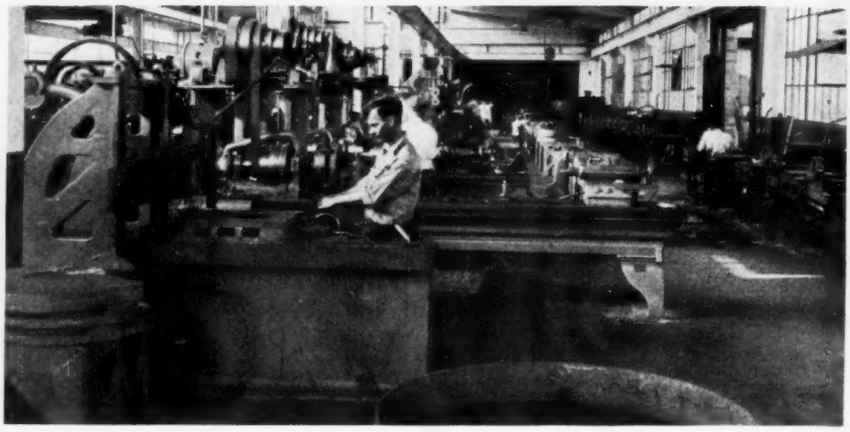
Nirosta metal is austenitic and nonmagnetic and is characterized by rapid grain growth when heated. Up to the present forgings of the material made by the company have been fabricated from ¾-inch to 3-inch rounds. One typical forging was a large threaded still plug which was formed on headers.

The procedure after forging is to trim, restrike, normalize at 2000 to 2150 degrees Fahr. and then introduce into a special pickling treatment which consists of two acid dips and two rinses. The acid dips are solutions of hydrochloric and nitric acids. The characteristic of the metal is that it hardens only by work hardening and not by heat treating. Hardness of finished forgings runs from 170 to 180 brinell. Forging work on the Nirosta steel is also done in the No. 3 forge shop with steam hammers.

Kitchen Ware Stamped

A great deal more work, however, has been done on stamping this steel This work is done on pickled finish sheets ranging from 24 gage up to 12 gage. Kitchen utensils comprise probably the major part of these stampings and include sauce pans, strainers frying pans, cafeteria trays, steam table ware, and ham boilers. Sheets usually are about 30 x 96 inches in size. In the production of a stamping the first operation is to blank, then draw and curl edges. If another draw is needed the stamping is pickled, using the same treatment as outlined above. If two draws are required, however, a heat treat can be run before the second draw, obviating the pickling operation. This is done in a slightly oxidizing atmosphere and at 1950 to 2100 degrees Fahr. depending on the gage of the metal. Two and a half to five minutes at the temperature is sufficient to relieve strains. Quenching may be in any suitable medium since, as has been mentioned before, the material can be hardened only by mechanical work.

A complete department is maintained for pickling and polishing the finished stampings which after forming are hung on a monorail conveyor and taken to the various grinding and polishing machines. Two popular finishes are carried out, one being a Butler finish resembling pewter and the other being a buff or mirror finish. In some cases, however, a pickled finish is satisfactory.



A section of the recently completed die shop for the stamping division

The Transue & Williams Steel Forging Corp. is particularly well equipped to handle a large variety of forging and stamping work, recent modernization and expansion programs permitting ample facilities for production operations on many types of steel articles. The plant comprises 28 buildings with a floor space of 262,150 square feet.

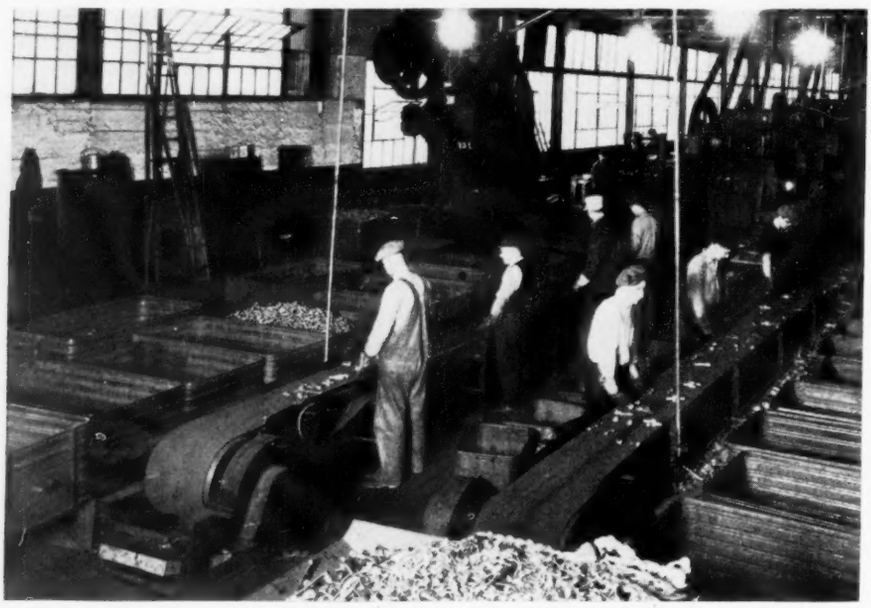
Three forge shops have a capacity of 4000 tons per month. No. 1 shop is equipped with heavy-type equipment including 8000, 10,000 and 16,000-pound steam hammers, 1-inch to 5-inch upsetting machines, bulldozers and the necesary oil-fired and gas fired heating and forging furnaces.

Complete Range of Hammers

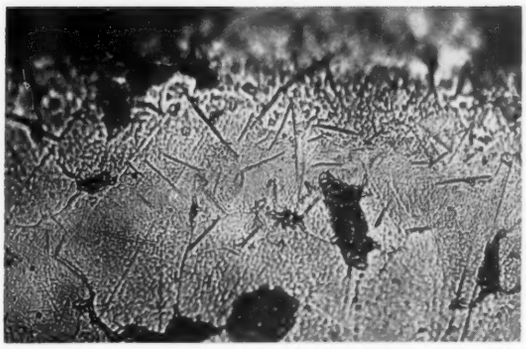
Equipment in the No. 2 forge shop is largely board drop hammers and as most material is this shop is cold trimmed not much press equipment is required. As mentioned previously, Nirosta and Nitralloy forgings are produced in No. 3 forge shop which is equipped with steam hammers ranging from 1000 to 6000 pounds in capacity. A continuous unit for forging crankshafts also is located in this shop where an unusual arrangement is provided for handling material. As the hammers are too close together to permit electric trucks to haul material back and forth between them and because of a difference in grade in the floor and the outside level, a balcony has been erected at floor level along the outer side of the building, wide enough for two trucks. Passageways are provided from the building to this balcony on each side of the hammers, through which the material is hauled. Monorail cranes serve to handle the various dies.

An overhead endless chain conveyor for handling work in process is a feature of the stamping department. This conveyor, 730 feet in length, loops around through the press room, assembly room, inspection, pickling and annealing depart-

(*Concluded on Page* 53)



Cold trimming department in the drop forge shop showing conveyor belts for handling forgings and scrap from the trimming presses



Photomicrograph showing nitride needles at edge of cyanided case in specimen held in cyanide for 15 minutes at 1300 degrees Fahr. X 500

Commercial Hardening by Cyaniding Process

BY E. F. DAVIS

Metallurgist, Warner Gear Co.

Part II

MANY metallurgists believe that cyaniding causes brittleness and it is true that cyanided work is frequently brittle. This has been attributed to a belief that nitrogen penetrates deeper into the core of the steel than the carbon, causing mass brittleness but this has been disproved by V. E. Hillman and E. D. Clark, *Transactions* of the American Society for Steel Treating, Vol. 10, Page 954. Nitrogen determinations of the core of cyanided steel do not reveal increase in nitrogen content.

Quenching Often Cause

Brittleness frequently is caused by quenching the steel from cyanide at a temperature below the refining heat of the core. Carburized work when quenched at a low heat without core treatment often exhibits the same shortness. The steel most frequently used for cyaniding is of SAE 1010 and SAE 1020 specifications and moreover is usually sheet, strip or cold-drawn material. This is overstrained metal and is subject to abnormal crystalline growth at low temperatures. A weak crystalline core and a highly nitrided case is a poor combination for ductility.

If the temperature is increased to 1550 or 1600 degrees Fahr. instead of the usual 1400 to 1450 degrees Fahr. and the steel quenched in oil instead of water a file hard surface is attained with a tough core which will withstand considerable bending before fracture. This is unquestionably one of the most certain ways to eliminate cyanide brittleness and permits the use of steels up to 0.40 per cent carbon without danger of breakage. The oil quench instead of the water quench has been adopted in many plants for the hardening of small parts with excellent success.

Another cause of cyanide brittleness is the relation of the comparative cross-section of the case to the core. If the cyanided case is deep in proportion to the core then the predominating properties of the steel after cyaniding will be those of the case and the core; and consequently the cyanided case is extremely brittle. This may be best illustrated by the brittleness noted in small diameter wire used to hold parts in the cyanide operations; also the brittleness of parts which accidently fall into cyanide pots and remain for an indefinite period. Such parts should be scrapped but often they are not.

Cyaniding has become a common practice in gear hardening to improve the wearing surface of gears without resorting to carburizing by pack hardening methods. In fact, the majority of the gears used in this country for automobile transmissions are cyanided. This treatment is given to gear steels of SAE 2345, SAE 3250, SAE 6145, and SAE 5150 analyses, sometimes modified in carbon content but of the grade known as oil treating steels. Dynamometer and road tests have shown nearly 11 times the wear of the cyanided gears over those hardened by regular oil treating methods. However, it has been found that cyaniding is done at the expense of impact and under certain conditions cyaniding is not a practical procedure.

Hardness a Prime Factor

Steels between 0.45 and 0.55 per cent carbon of alloy grades are not what might be termed high impact steels. A possible exception to this might be SAE 2345 which is without question the best of the gear steels for strength and impact. All of the oil hardening steels mentioned, when hardened to standard heat-treating practice, have excellent wearing qualities and sufficient impact for passenger automobiles. The tendency of recent years however, has been to reduce weight and the size of gear boxes, and this has meant smaller tooth faces and finer pitched teeth with higher tooth pressures. To improve the wear more hardness of the surface has been found necessary. This means that the surface of the gear has been covered with a film 0.003 to 0.006-inch thick of high-carbon highly nitrided steel. It is quite apparent that cyaniding does not improve the impact of any steel and higher brittleness will result.

Lowering the carbon content of the gear steel improves impact values; hence a balance of strength and impact with greater hardness can be maintained by the simple expedient of lowering the carbon. One successful gear job utilizes a direct cyanided gear of alloy steel of about 0.35 per cent carbon.

Fine pitched teeth of 10 to 16 pitch cannot be as successfully cya-

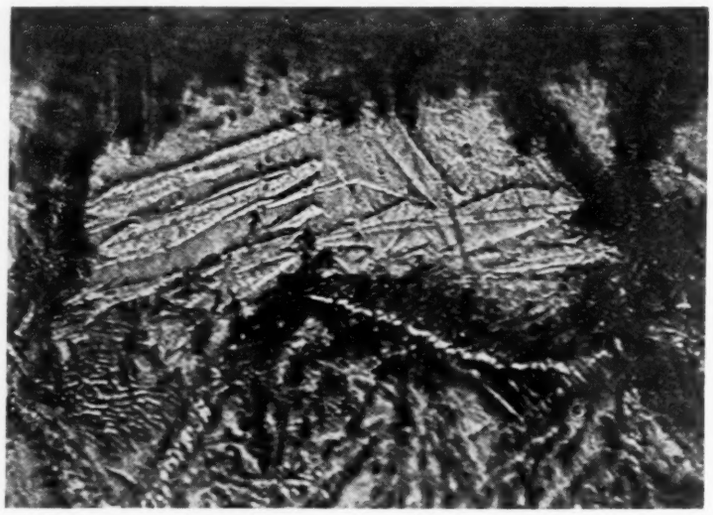
BRITTLENESS of cyanided steels and its relation to the cyaniding temperature and quenching methods, cyaniding gears and wire, and a discussion of various advantages and disadvantages of cyaniding as a hardening process are set forth in the accompanying article, the second in a series of three. The first instalment appeared in the July 17 issue of STEEL; the third and concluding section will be presented in an early issue. The author, E. F. Davis, is metallurgist, Warner Gear Co., Muncie, Ind.

nided as the coarser pitch teeth due to the relation of the case and core area as has already been discussed.

Gear cyaniding is performed in three different ways. First, by preheating to about 1250 degrees Fahr. and finishing the heating cycle in cyanide. Second, by the cyanide wash or cyanide dip method whereby the steel is heated to the hardening temperature in a rotary or hump furnace and transferred to a molten cyanide bath held at some definite temperature from 1450 to 1500 degrees Fahr. Considerable boiling occurs due to the reaction of the cyanide with the oxide on the surface. This subsides in about 1½ minutes whereupon the gears are quenched. The third method or direct cyanide process consists of placing cold gears in the cyanide and bringing them up to heat in the molten bath. The first two methods give a light, thin skin on the surface. Gears cyanided by the second method usually do not have file hard surface. On the other hand, the direct cyanide lowers impact values more than the preheat or cyanide dip methods. Thus it may be assumed that direct cyaniding produces the best wearing surface but the lowest impact and lower carbon steels are necessary for direct cyaniding than for the cyanide dip. Cyanides reduce iron oxides and also by the same token protect the surface from oxidation so that a gear has an excellent surface free from scale or pits and, in fact, a surface as good as when it was machined originally. Steel grows in volume in cyanide about 0.001-inch per linear inch of cross section and for this reason it is often believed that steels change more in cyanide than in the air furnace. But this is not due to the cyanide but to the fact that steel, on being converted to the martensitic phase in quenching increases in volume. This volumetric change occurs no matter what means are used for heating but when gears are hardened in gas, oil, or electric furnaces a certain amount of oxidation compensates for the phenomena of growth when the steel changes from the original pearlitic to the martensitic micropattern. In cyanide there is no oxidation, hence the maximum increase in size is apparent. This is also the reason why shafts and other parts apparently swell in cyanide but do not in furnace hardening practice.

It is difficult to obtain a flexible galvanized coating on low-carbon wire which will not crack when the wire is bent. Wire of this analysis is sometimes given a preliminary treatment in a cyanide bath to impart a high-carbon surface for better adherence of the galvanized coating. The strands are run through a lead pan to bring them to heat and then pass through cyanide over the bath and contained in a partially submerged ring. Cyanide, being lighter than lead, floats on the surface.

The photomicrographs shown in Part I of this article, Page 44 and 45, July 17 issue of STEEL, will explain many of the results obtained in cyanide hardening. One accompanying illustration shows a magnification to 1500 diameters of a cyanided case in the annealed condition. A study of the microconstituents present reveals grains of normal lamellar pearlite, needles of nitride of iron (probably Fe_2N) imbedded in a matrix of ferrite, and a third constituent having somewhat the appearance of sorbite but no doubt a nitrogenized pearlite. To this constituent Giolotti has given the name of "flavite."



Photomicrograph at 1500 diameters magnification, showing nitride needles in ferrite of cyanided case

Status of Nitrogen

It is a difficult matter to determine the definite status of nitrogen in cyanided surfaces because nitrogen can combine with iron in so many different ways, such as Fe_2N, Fe_4N, FE_6N and Fe_8N. Elemental uncombined nitrogen can infilter between the ferrite grains. It can also retard carburizing by occupying the boundaries of the ferrite. Furthermore, it has the property of replacing carbides and then itself decomposing and departing from the outer surface of the steel leaving a soft decarburized rim.

Although nitrides may be regarded in general as having the property of imparting hardness and brittleness to steel, yet all nitrides are not equal in this respect. Recent developments in the ammonia process for nitriding have shown it possible to nitride wire so it will withstand alternate bendings without fracturing the surface. According to most authorities Fe_2N which assumes the needlelike form, is the worst offender in regard to brittleness.

The lower carbon content of the cyanided case in comparison to the carburized case is no doubt due to the intrusion of nitrogen in the ferrite matrix at lower temperatures. It is evident that two hardening agents are present in the cyanided area—nitrides and carbides, with possibly two or more varieties of the former.

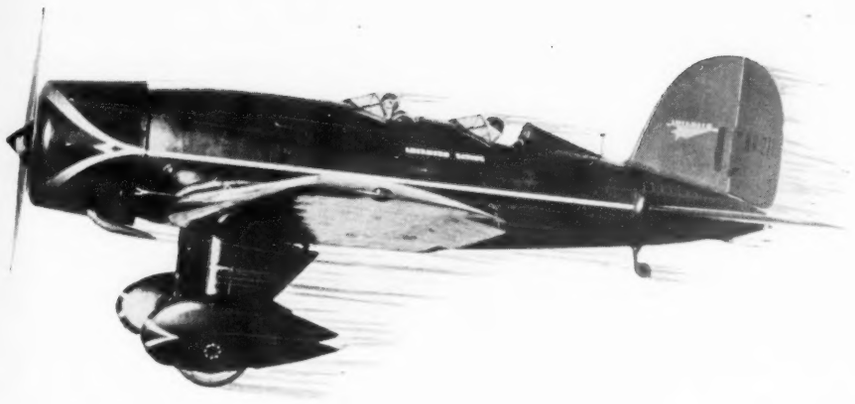
That nitrides are formed at the lower temperatures is quite evident from the nitrogen content obtained from steels hardened at various temperatures. Also, parts given the cyanide dip do not show the nitrogen percentage of parts heated in cyanide from the cold condition. Another noticeable item revealed by microscopic studies is the difference in the case obtained at low and high temperatures. Specimens cyanided at 1300 and 1400 degrees Fahr. reveal a sharp line of demarcation between case and core, whereas those cyanided at 1500 degrees and higher, show a marked knitting of the case and core.

Lead and cyanide are the two most common mediums for immersion hardening. An advantage of cyanide over lead is the fact that its specific gravity when molten is less than steel; hence no effort is required to keep the parts below the level of the bath. On the other hand, when lead is employed for hardening, it is necessary to force the parts below the surface, for steel will otherwise float on molten lead. Much defective lead hardening has been caused by imperfect submersion of the work while heating.

Steel will heat four times faster in lead than it will in cyanide due to the greater heat conductivity. A piece of steel 1-inch in diameter may be brought to 1450 degrees Fahr. in 2½ minutes whereas in cyanide a minimum of 10 minutes is required to accomplish the same thing. Cyanide therefore is not as good a production medium as lead due to its difference in specific heat although those who advocate slow heating would look with greater favor on cyanide on account of the milder heat transfer.

Tool steels and certain sensitive

(*Concluded on Page 53*)



Aeronautical Industry Favors Army-Navy Steel Standards

IN DRAFTING standards in the aeronautical industry drawings and specifications, developed originally by the technical branches of the Army and Navy Air services, first are co-ordinated for the two services at a preliminary conference, and then are circulated as tentative AN standards to the commercial aircraft manufacturing industry and allied industries for criticism and comment. Following this, each subject is considered in detail at a general army and navy conference in accordance with a prearranged schedule and with the presence of all interested parties. Only after full and reasonable consideration and agreement is an AN standard accepted and promulgated.

Standards Adopted Voluntarily

The AN specifications and drawings so adopted become the basis of all the procurement requirements of the United States government for military plans. Because of the excellence of their preparation, and the thoroughly practical nature of their content, the AN standards have been adopted voluntarily and largely by the commercial aircraft industry as indicating the most desirable grade of aircraft materials and parts.

The activities of the recent conference of major interest to the steel industry include new steel specifications, revisions to current specifications and steel part standards.

Chrome-nickel corrosion-resistant sheet or strip: The specification adopted for this steel involves the following chemical composition:

Element	Per cent
Chromium	17.00 to 20.00
Nickel	7.00 to 10.00
Carbon, maximum	0.20
Sulphur, maximum	0.040
Phosphorus, maximum	0.040
Manganese	0.20 to 0.60
Silicon	0.10 to 1.00

The physical properties are specified as:

Tensile strength, (min.) lbs./sq. in.	85,000
Yield point, (min.) lbs./sq. in.	40,000
Elongation in 2 inches, (min.), Sheet ⅛-inch and thicker per cent	45
Sheet less than ⅛-inch, per cent	40

The yield stress is defined as that stress under which the test specimen shows an extension of 0.003-inch per inch in excess of that which would be computed from Young's modulus of elasticity of 29,000,000 pounds per square inch and the formula: Unit stress is equal to Young's modulus X unit deformation. The rapidly increasing interest of the aircraft industry in stainless steel as a fabrication material makes this standard specification extremely timely.

GROWING interest in the application of steel to aircraft manufacture is attested by the consideration given to specifications of this metal at the sixth annual Army-Navy Standards conference held at Wright Field, Dayton, O., in May. These conferences are a splendid illustration of what can be accomplished by the steel industry in meeting the needs of a highly-specialized and technical fabricating industry, when the proper opportunities are extended for constructive co-operation. A resume of the recent conference insofar as steel is concerned is embodied in the accompanying article.

Machined Part Specifications

Chrome-Vanadium Medium Steel Bars and Billets: A specification for SAE 6135 steel, for use in propeller hub forgings and other aircraft machined parts, was adopted. The physical properties specified in the heat-treated condition are as follows:

Tensile strength, (min.), lbs./sq. in	125,000
Yield point, (min.) lbs./sq.in.	100,000
Elongation (min.) in 2 in. gage length, %	16
Reduction of area (min.), %	50

Chrome-Vanadium High-Carbon Steel Bars: The specification adopted covers SAE 6150 steel, for use in the manufacture of springs and for general machining and forging purposes. The physical properties required in the heat-treated condition are as follows:

Tensile strength, (min.) lbs./sq. in.	150,000
Yield point, (min.) lbs./sq.in.	125,000
Elongation, (min.) in 2 in., gage length, %	14
Reduction of area, (min.), %	45

Carbon Steel Spring Wire: The specification considered for this commodity permits either of the chemical compositions shown in Table I.

The tensile strength requirement varies in accordance with the diameter of the wire ranging from 350,000 pounds per square inch for the smallest diameter of 0.0005-inch to 225,000 pounds per square inch for the largest diameter of 0.180-inch. Because of the difference in opinion on bend test requirements for certain sizes, the specification will be held in abeyance until further check tests are made.

Steel Specification Revision

Chrome - Molybdenum Seamless Steel Tubing: A proposal from a steel manufacturer to revise the physical properties to those shown in Table II was tabled until further recommendations could be obtained from the steel industry.

The yield point was defined as that stress under which the test specimen shows an extension of 0.005-inch per inch.

Mild Carbon Seamless Steel Tubing: It was agreed to change the physical properties to tensile strength, 65,000 pounds per square inch; yield point, 40,000 pounds per square inch; and, elongation in 2

inches minimum, 15 per cent. The crushing test requirement was changed from 25 to 20 per cent.

Chrome-Molybdenum Streamline Steel Tubing: Proposals from a steel manufacturer to increase the tolerances on the larger size streamline shape tubing and to include provisions for elliptical and square tubing, were held in abeyance until further recommendations could be obtained from other steel tubing makers.

Miscellaneous: Minor modifications were considered and acted on in the specification for quarter-hard mild carbon (SAE 1025) steel sheet or strip, chrome-molybdenum steel sheet or strip, high-strength steel wire and extra flexible 7 x 19 steel cable.

Table I

Composition of Carbon Steel Spring Wire

Carbon, per cent	Manganese, per cent	Phosphorus,* per cent	Sulphur,* per cent	Silicon, per cent
0.65-0.85	0.50-0.80	0.030	0.035	0.10-0.25
0.75-1.00	0.25-0.50	0.030	0.035	0.10-0.25

*Maximum

Table II

Properties of Chrome-Molybdenum Tubing

Wall thickness inches	Tensile strength, lbs./sq. in.	Yield point, lbs./sq. in.	Elongation in 2 inches, per cent
Up to 1/8	100,000	80,000	10
1/8 to 3/16	95,000	75,000	10
Over 3/16	90,000	70,000	10

Steel Part Standards

In the specifications for streamline tie-rods and internal tie-rods, a provision was made for corrosion-resistant tie-rods made of the material specified in the new specification for chrome-nickel corrosion-resistant steel. Full detail tolerances and tests for these new tie-rods were provided. This action, as well as the provision that all exposed parts of the antifriction bearing in the new control pulley should be of stainless steel, shows a significant trend.

In the inauguration of detail standardization in the aircraft engine small parts field, a step which is of great importance both to the aircraft and steel industry, SAE 3140 or SAE 6150 were adopted as the optional steels for bolts, plain and castellated nuts and filister head screws. This would indicate that these steels are destined to become the standard alloy steels for aircraft engine screw-machine product parts. Lock rings, lock washers, plain washers, Woodruff keys, cotter pins, etc., follow commercial practice with respect to steel designation. The steel for the propeller clamp ring was changed to SAE 6135. While many other steel parts were under consideration, the foregoing represents the significant data from a steel manufacturer's viewpoint.

Grinder Decreases Time of Surfacing Rolls

Manufacturers engaged in cold rolling steel, nickel, gold, silver platinum, zinc, brass and foil, are being called upon for new standards of quality both in uniformity of gage and character of finish. Heavier grinding machines have been designed and built to produce greater accuracy than can be secured with the ordinary equipment used for much lighter work. Experiments to find the most suitable grinding wheels have led to new types of wheels to produce the mirror-like roll surfaces required. Wheels now are available that cut freely removing stock rapidly and at the same time leaving a finish heretofore unobtainable except by slow and careful work.

One of the new machines recently placed on the market by the Norton Co., Worcester, Mass., is a 28-inch unit, built in lengths of 96 inches and larger. The proportions of the base and tables and the wheel slide are such as to insure rigidity. The unit is built with flood lubrication of the table ways and spindle bearing and is equipped with multiple V-belts for driving the spindle without vibration.

It is possible in this new machine to produce a quality of finish with less wheel changes than has been the custom in the past. Older practice is to rough grind with not finer than 60 grain, then 100 grain or 150, followed by 200 and finally 400 or 500 grain for the final polish. Rolls are finished in the new machine as follows:

New Rolls—Hardened Steel

1. Rough grind; 46 DK alundum vitrified.
2. Semifinished grind; 100 I crystolon vitrified.
3. Finish grind; 400/A grade I crystolon shellac.

New Chilled Iron Rolls (rough turned)

1. Rough grind; 36/B—T2 or T3 alundum bakelite.
2. Finish grind; same wheel.

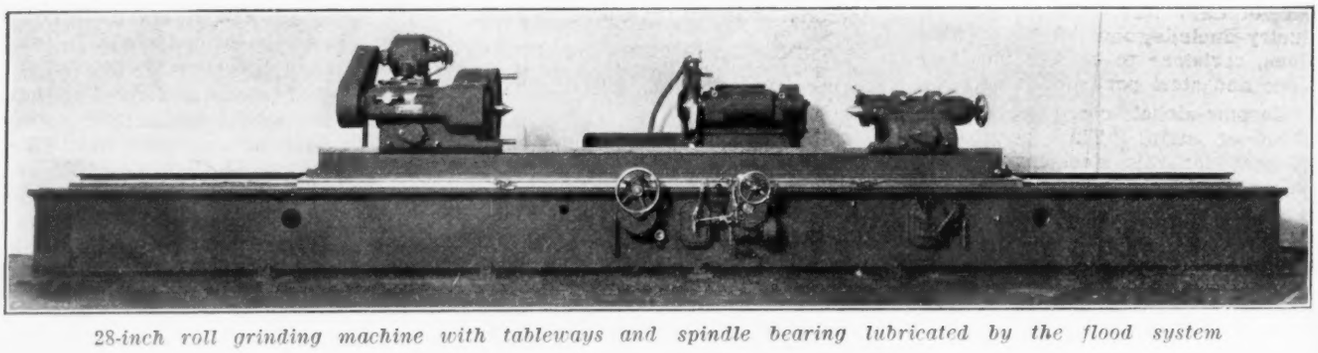
Regrinding Hardened Steel Rolls

1. Rough grind; 100 I crystolon vitrified.
2. Finish grind; 400/A grade I crystolon shellac.

Regrinding Chilled Iron Rolls

1. Rough grind; 36/B—T2 or T3 alundum bakelite.
2. Finish grind; same wheel.

The selection of wheels depends to a great extent on the size of the roll and degree of hardness. The table, however, covers a fairly wide range. The new machine and wheels reduced the grinding time considerably. New chilled iron rolls 24 inches diameter and 30 inches long have been ground to a highly reflective finish, removing about 0.030-inch from the diameters in a total of 25 hours. This time includes not only the roll bodies, but a high finish on the necks and fillets as well. This work formerly required 39 hours.



28-inch roll grinding machine with tableways and spindle bearing lubricated by the flood system

Rotary-Hearth Furnace Has Many Useful Applications

FURNACES built with a motor-driven rotary hearth are finding wide application in England for annealing, case hardening and other operations. A unit of this type designed by King-Taudevin & Gregson, Ltd., Sheffield, England, is being introduced in this country by H. L. Dixon Co., Pittsburgh. The rotating hearth is mounted on ball bearings, immersed in oil. Low fuel consumption is effected by an improved port arrangement. Definite control over the gas and air supply permits any degree of reducing atmosphere to be maintained within the furnace and for this reason the life of the annealing pots is increased about sixfold. A red bloom appears on the surface of the pots which acts as a protecting agent.

Uniform annealing and a definite acceleration and gradient of temperature is accomplished at all times. The unit is suitable for open annealing of all types of material. Tests in actual practice show the same condition in any of the pots transversely and vertically. The furnace is generally designed for producer gas fuel, although the port construction may be modified for the use of natural gas, oil or tar.

Waste Gases Provide Heat

Air is introduced into recuperators where it is heated by the waste gases on the counter-current principle. The hot air from the recuperators passes through ports into a chamber where it is mixed with the hot gases; this mixture passes into the furnace where partial combustion takes place. Tertiary air is introduced into the furnace from the recuperators through damper-controlled ports, completing combustion in the furnace. The products of combustion thus are directed across the furnace where they make contact with the pots containing the materials to be treated. A swirling atmosphere is set up and the gases are carried around the chamber and by this means the maximum amount of heat is absorbed. A constant temperature is maintained giving absolutely uniform heat to the pots. The waste gases are carried from the furnace chamber through the exit flue into recuperators and from there into the damper-controlled chimney flue.

The furnace chamber is circular in shape, to suit the rotating table or hearth . The dimensions of the furnace and the rotating hearth depend upon the capacity requirements. The hearth is built of heavy castings and is lined with firebrick with an underlying layer of insulating material. This is carried on an iron base plate to which is fitted a ball race supporting the rotating hearth.

The base plate is of such a design as to form an oil bath in which the lower race ring is fitted loose and the whole ball race is immersed in oil. A concentric pin maintains the rotating hearth in its central position and eliminates any thrust on the ball race. To rotate the hearth, a worm wheel is fitted around the periphery of the lower hearth casting engaging a worm mounted on a shaft connected to any suitable prime mover.

Mechanical Parts Protected

The circumference of the top casting of the table is provided with a lip projecting down into a sand-sealed trough to protect the mechanical parts of the rotating table from the atmosphere of the furnaces and the infiltration of any air into the furnace chamber. The fuel consumption varies with the class of material treated and output obtained. About 225 pounds of coal per ton of steel, not including boxes, is an average figure when operating under normal conditions and with a reducing atmosphere.

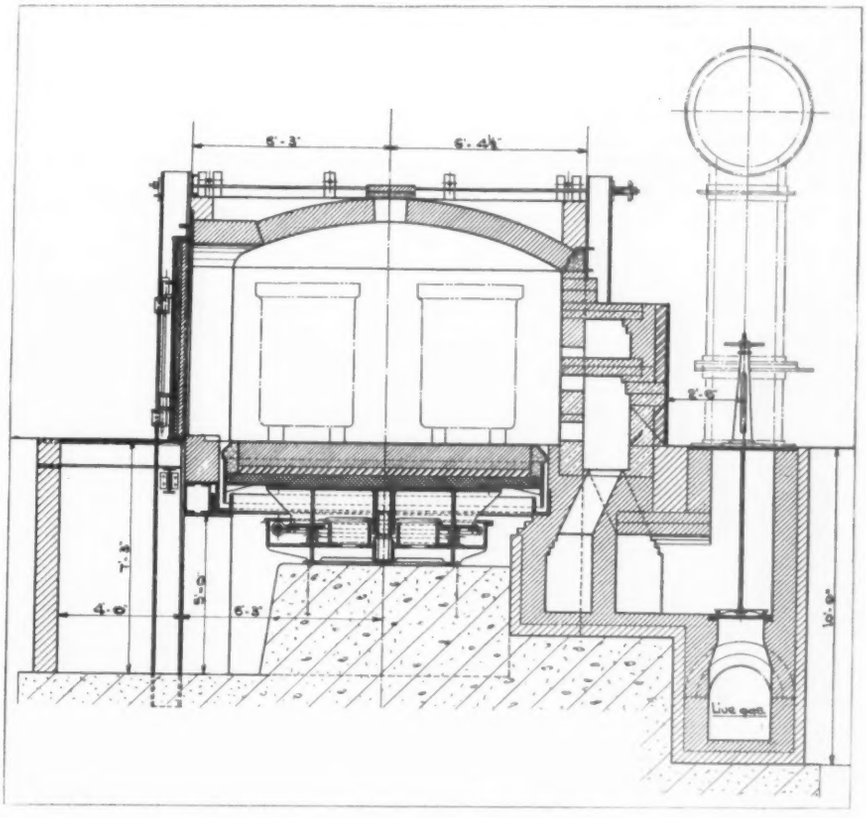
The following figures of fuel consumption and efficiency are based on actual tests and normal operation:

	Pounds
Coal consumption	10,080
Weight of steel annealed	114,642
Weight of pots	163,464
Gross weight of charge	278,106
Coal per net ton steel treated	194.8
Coal per gross ton charge	81.4
Thermal efficiency heating net charge, per cent	20.5
Thermal efficiency heating gross charge, per cent	49.0

Plans River Coal Dock

Baltimore & Ohio railroad has applied for a federal permit to build a terminal in the Pittsburgh district on the Monongahela river 6.7 miles above its junction with the Allegheny river. This marks an important move towards co-operation by the railroads in the promotion of river use.

The proposed terminal will front 3800 feet on the river and handle 50 loaded and 50 unloaded coal cars. The improvement is planned principally for transferring coal from railroad cars to barges.



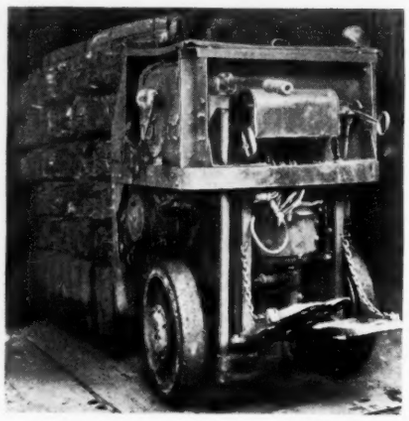
Cross-section of furnace with motor-driven rotary hearth which is being used for annealing, case hardening and other operations

Use of Industrial Trucks Cuts Costs $80,000

BY W. C. BABBITT
Field Engineer, Industrial Truck Association

THAT substantial improvements in mechanical handling methods often can be made without excessive expenditures for equipment and changes in plant layout has been demonstrated by the effective use of electric industrial trucks at the plant of W. Ames & Co., Jersey City, N. J., manufacturer of spikes, bolts, merchant bar iron, reinforcing bars and special castings. A moderate sized organization, the company produces 450 to 500 tons of product a week, and in contemplating improvements was confronted with difficulties which face perhaps hundreds of plants throughout the country today.

For one thing its operating area was congested. In business for many years and with much adjoining property built up, the company could not easily expand its site to meet demands of increased production. Too, there were narrow aisles and numerous short turns along the route material had to travel and these could only be altered slightly.



Lift trucks are both foot and hand operated. The worn tires testify to the heavy loads carried and adverse floor conditions

Floors in Poor Condition

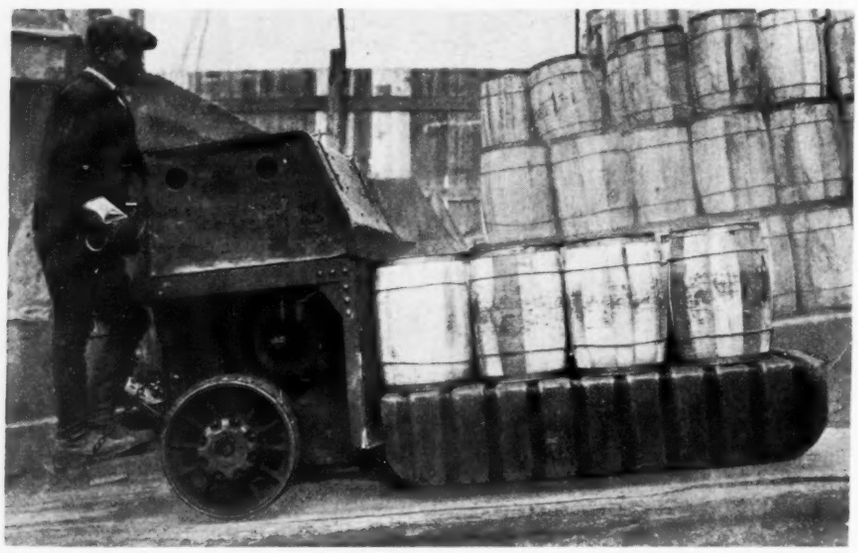
The floors and roadways were much the same as to be found in the average steel plant, being partly cobblestone and partly dirt, with sheet steel laid down in some places. Moreover, the nature of the manufacturing processes and the conditions imposed tended to eliminate certain handling refinements such as might be possible were the products lighter.

Some of these difficulties were enough at first to discourage consideration of electric trucks, but investigation revealed that such could be installed to advantage, with the resultant purchase of four 3-ton trucks, of the low-lift industrial type. These trucks supplement the service performed by narrow-gage cars and seven electric overhead cranes, the latter ranging in capacity from 2 to 10 tons.

The manner in which the work of these trucks dovetails with that of the other conveying equipment is seen in the handling of raw materials which comprise billets and steel scrap. Cranes unload these materials from the railroads cars, and place the scrap in front of the shears, where it is sheared to uniform length, bound into fagots and placed on steel skids. Electric trucks then are brought into use in moving the fagots to one or the other of two rolling mill furnaces, the material, incidentally, being weighed in transit. Trucks also assist the narrow-gage cars in conveying billets from the unloading platform to the rolling mill furnaces.

Cranes and narrow-gage cars do most of the handling in the rolling mill, where the rolled products for the bolt and spike shop are cut to lengths of 10 to 20 feet, and the merchant bar iron and reinforcing rods to lengths specified by consumers. But in the bolt and spike department industrial trucks again are brought into use in the handling of the finished products.

In the case of most products of this department packing is done at the sorting tables, the material being dropped into kegs resting on skids. When these kegs are headed, unit loads are made up and moved by electric trucks to cars or to the warehouse. In the case of some of the heavier items, such as 2-foot dock spikes, loads are placed directly on trucks and prepared for shipment in the warehouse.



Electric lift truck moving skid load of packed kegs to warehouse. Note the pressed steel skid which is easily picked up and deposited at any point

Miscellaneous Haulage

Much of the value of the trucks is to be found in the hauling of miscellaneous supplies, in the transporting of rolls for the mills and in the handling of machined castings and forgings. They are put to considerable use in the forging department.

Incidentally, a considerable portion of the finished products is handled from machine to warehouse over two ramps, one which is 60 feet long and laid at a 6 per cent grade and the other 85 feet long at a 7 per cent grade. As both of these ramps are located outdoors, and subject to conditions of rain and snow, there was question as to whether trucking service could be performed satisfactorily over them. Except that it has been necessary to use sand in icy weather, no difficulty has been experienced, however. There was question, too, over the narrowness of some of the aisles. However, handicap in this direction was overcome by the flexible control of the trucks and the fact that the trucks were but 3 feet in width.

Needless to say, substantial saving has been effected in labor. In the

handling of fagots from the bundling machines to furnaces, or in the handling of billets, for instance, one man with an electric truck now does the work formerly done by six men with hand trucks. Further, the confusion and delay resulting from six men working in a congested section have been eliminated.

An economic saving also has been effected by increasing the loads as production schedules demand. The company, in fact, has been able to average 9000 to 10,000 pounds per load, although the rated capacity of the trucks is 6000 pounds.

A careful record of operating costs reveals that on a basis of four trucks operating over a period of six years, 24 hours per day, average repair and maintenance costs, not including tires, have been $389.75 per year, or $97.44 per truck per year; also, that the battery costs total $3035 since the original installation, or $126 per truck per year. Adding $150 per year for electric current and $250 for all fixed charges and overhead, including depreciation, interest on investment, etc., the total annual cost per truck amounts to about $623.

This, it is pointed out, is to be compared with the total saving of four to six men per shift for the four trucks. Using the minimum figure of four men, the saving amounts to $15 per day per truck, or, allowing 300 working days to the year, a total of $4500 per year per truck. From this, however, must be deducted the expense of tires, which is abnormally heavy, due to the overloading of the trucks and to the adverse floor conditions.

But in spite of all expenses involved L. N. George, maintenance engineer, states that the trucks paid for themselves in much less than a year and that total savings since their installation are about $80,000.

Dock spikes are piled on steel skids which are picked up by a lift truck and moved to the warehouse for storage

Commercial Hardening by Cyaniding Process

(*Concluded from Page* 48)

high carbon alloys cannot be hardened safely in cyanide due to its nitriding action. Steels which are austentic, such as carburized 5 per cent nickel steel, are not hardened successfully in cyanide. Carburized 3½ per cent nickel steel is not as successful in cyanide as the carbon-chromium and chrome-nickel steels.

For most production steels cyanide salt bath hardening is as near ideal in its possibilities as any method of treating steel known. No type of air furnace, whether gas, oil or electrically heated, can equal it in uniformity or exactness of control. Parts heated in cyanide can at no time exceed the temperature of the molten fluid surrounding them. The temperature differential is small due to the surge of the boiling action which tends to equalize itself. If the parts heated consist of thin and heavy sections both will come up to the temperature of the bath and no higher, and if a reasonable time is given to raise correctly the entire part to temperature, both thin and thick sections will leave the furnace at exactly the same temperature.

Oxidation Is Absent

The absence of oxidation or corrosion on the surface of parts hardened in cyanide is one of its attractive features. Parts may be finished, ground to size then hardened in cyanide and assembled without any further corrective machining. A wide variety of parts such as shackle-bolts, king-pins, shafts, levers, bolts, cups, screws, etc., are treated in this manner. However, the slight growth in diameter should not be ignored.

The quenching of cyanided parts in water is accompanied by considerable detonation and throwing of surface water. The explosion is more physical than chemical for only a small volume of the gaseous products is evolved directly from the reaction. The parts so quenched are surrounded at the moment of hardening in cyanide brine which no doubt increases the hardening intensity by increasing the heat conductivity of the water. In effect this is similar to the old blacksmith's stunt of having his helper sprinkle salt around a piece of steel as he is quenching it in water.

The temperature of the water does not seem to be important in cyanide quenching. Both cold and warm water seem to harden the parts equally well. Oils used for quenching cyanide work should be free from fatty acids. Cyanides are alkaline and saponify fats. The author recommends 28-degree paraffin oil as satisfactory for this purpose. It is inexpensive and will not thicken. If fatty acids are present they will soon become viscous and occasionally reach a consistency of butter due to progressive saponification.

When quenching from a cyanide bath containing a scum covering, care must be taken that none of it remains on the work because its non-conducting properties cause it to retard the quenching action and produce soft spots wherever it adheres. Dark colored work from cyanide should always be looked upon with suspicion. It usually is soft and indicates a defective cyanide bath.

To be concluded in an early issue of STEEL.

Stamping and Forging Special Steels

(*Concluded from Page* 46)

ments and shipping platform. Hooks on 20-inch centers are provided on the chain, on which the work is suspended and moved at a speed of 35 feet per minute. At various points the conveyor loops down from the ceiling, bringing it to a convenient level for loading and unloading.

Press equipment is of the latest design and covers a wide range of capacities. Annealing of stampings is done in a continuous oil-fired furnace 22 feet in length, provided with a chain type conveyor consisting of four chains that run in alloy steel channels. Work usually remains in the furnace from 2½ to 3 minutes. The temperature is under thermostatic control and ranges from 1450 to 1700 degrees Fahr.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

USES:

Chrome-Nickel Stampings

Chrome-nickel steel and chromium steel used for miscellaneous types of hub caps, Iron Age, June 12, p. 1755, 3 pp., 4 illusts.

Corrosion-resisting steel has taken an important place in the automotive industry as a competitor of chromium plated material. Because of its permanent rustproof qualities it is winning favor as a material for hub, radiator and gas tank caps.

Two grades of this steel are used in manufacturing caps, depending upon customers' wishes. One is a high-chrome-nickel steel with 18 per cent chromium and 8 per cent nickel; the other a plain chromium steel containing 18 per cent chromium and no nickel. Because of its increased ductility, due to the nickel content, the chrome-nickel steel is easier to draw than the plain chromium steel, although the latter has the advantage of being less expensive. The chrome-nickel grade also is slightly easier to polish and buff.

Comparing manufacturing costs with caps made of plain carbon steel, the chrome-nickel is more difficult to draw because of its toughness and slightly harder to polish and buff than the cold-rolled plain carbon steel. However, the increase in cost of these operations is largely offset by what is saved in plating and in buffing after plating. The cost of a large cap such as present styles demand for hub caps, is considerably more than when the cap is made of chrome-nickel steel than when made of cold-rolled carbon steel, because of the additional amount of steel required for each cap.

—STEEL 7-31-30

Die Castings

Modern die castings of the zinc-base types, described by W. M. Peirce in Metals and Alloys, June, p. 544, 2½ pp., 6 illusts.

Volume for volume, a zinc-base die casting is said to be the most inexpensive nonrusting material available. Die casting forms the metal so close to specified dimensions that machining costs are negligible. Hence, where a strength of 50,000 pounds per square inch with low ductility is satisfactory, zinc-base die castings constitute one of the most attractive metallic materials it is possible to employ.

—STEEL 7-31-30

Pipe Lines

News of the heaviest buying movement in the history of the steel pipe industry, in Business Week, July 23, p. 26, 2 pp., 1 illust.

Pipe manufacture is at present the mainstay of the steel industry, more than 500,000 tons being booked in the last few weeks. Mills are operating 24 hours a day to supply the demand. Republic Steel Corp. and Youngstown Sheet & Tube Co. have no free capacity before Nov. 1. National Tube Co., subsidiary of the United States Steel Corp., is booked solid for the rest of 1930 at its McKeesport, Pa., and Lorain, O., plants. The A. O. Smith Corp., Jones & Laughlin Steel Corp., and smaller producers report orders that will keep them busy well into the fall. Communities in 36 of the 48 states will be served with natural gas before the end of 1931, while the natural gas which will flow daily into Chicago when the pipe lines to that city from the Texas fields are completed will be equal in heat content to 12,000 tons of coal, 300 railroad carloads.

—STEEL 7-31-30

FABRICATION:

Bridge Wire

Tests carried out at Lehigh university on the cold-drawn wire which replaced the failed wire for the Ambassador suspension bridge at Detroit, and the Mount Hope bridge at Providence, R. I., by Leon S. Moisseiff in Engineering News Record, July 17, p. 93, 3 pp., 3 illusts.

The tests were planned to cover all practical questions in connection with the strength and behavior of bridge wire during its storing, erection and subsequent service as a part of the cables. In addition to the more usual tests—modulus of elasticity, shape of stress-strain curve, proportional limits, ultimate strength, elongation and reduction and uniformity along a coil—creep or fatigue tests under loads up to one and one half times the design stress for periods up to two months were made. Freezing tests, determination of effect of mishandling and of wedging action completed the program. The results were satisfactory and reassuring.

—STEEL 7-31-30

Can Manufacture

A resume of the condition of the can industry outlining the factors involved in past developments and influencing future prosperity, in Business Week, July 23, p. 14, 2 pp., 1 illust.

Largely through the success of the two principal companies in the field, the tin can industry has escaped the business depression experienced by other industries. Although food preservation takes about 70 per cent of the yearly output, a diverse market of non-food products such as gasoline, oils, paints, chemicals, candies, walnuts, and a variety of other articles swells the demand. The final control of this year's success lies in the hands of the weather. Should adverse weather retard or materially destroy the crops of the three vegetables requiring the most tin plate, tomatoes, corn and peas, the progress made so far this year might be lost.

—STEEL 7-31-30

Polishing Radiator Shells

Description of stamping and polishing operations in fabricating corrosion-resisting steel radiator shells for the Ford motor car, in Automotive Industries, July 12, p. 44, 3½ pp., 3 illusts.

A considerable tonnage of corrosion resisting steel now enters into the fabrication of bright parts such as radiator shells, lamps and hub caps, for the Ford car. Many problems have been encountered and solved in the development of methods and technique for deep drawing this steel, as well as the design of automatic polishing and buffing machines. Seventeen press operations are required to form a radiator shell. Al-

though generally accepted principles of die design apply equally well to this new type of steel, several important differences are noted.

The stamped shells are mounted on fixtures, five to a fixture, and travel along a floor conveyor, under the polishing wheels. The fixtures permit turning the shells to all positions required by the process. After the shells are polished they are buffed on automatic machines which bring out the bright finish.

—STEEL 7-31-30

PRODUCTION:

Pipe Couplings

The manufacture of pipe couplings and accessories for the construction and operation of pipe lines and gas mains described by J. B. Nealey, in Industrial Gas, July, p. 9, 3 pp., 4 illusts.

Growth of the pipe line systems for transporting gas, oil and gasoline has made necessary the development of the production of pipe couplings to a high degree of efficiency. Detailed descriptions of the various operations are presented together with a description of some of the problems confronting the manufacturers, and how they are solved.

—STEEL 7-31-30

Petroleum Coke

Used widely as pulverized fuel, the production of this material is growing in importance, in Professional Engineer, July, p. 23.

Petroleum coke is formed as the solid residue of the destructive distillation of petroleum products whenever these products are heated above their decomposition temperatures. Viewed as a raw material for further manufacture it is regarded as the purest form of industrial carbon available in large quantities and as such is essential to many important industries. The annual value of the petroleum coke production of the country is placed at $7,000,000.

—STEEL 7-31-30

Wrought Iron

Mechanical production in 700-pound balls described in the Iron Age, June 19, p. 1814, 4 pp., 5 illusts.

Mechanical puddling methods, whereby pig iron is transformed into wrought iron with minimum manual effort, are under commercial operation at the plant of the Wrought Iron Co. of America., Lebanon, Pa. A 700-pound puddle ball is produced in an Ely-type rotary furnace, four of which are operated at the plant for puddling. The ball is dumped from the furnace into a conveyor car which carries it directly to the squeezer.

Considerable time is saved in the puddling operation by melting the pig iron first in an oil-fired furnace from which ladle removes it to the puddle furnace. All operations within the rotary furnace are similar in their general character to those involved in hand puddling. The heat is cleared in the usual manner, roll scale or other iron oxide is added, the boil takes place and the material at the predetermined stage of its progress is caused to ball up into a cohesive mass.

—STEEL 7-31-30

Alloy Scrap

The effect of using alloy scrap in making pig iron, by E. K. Smith and H. C. Aufderhaar, in Iron Age, July 17, p. 156, 3 pp., 8 illusts., 1 table.

Use of alloys in steel and cast iron is increasing at an extraordinary rate. Hence ferrous scrap metals will soon reach the market bearing ever increasing amounts of alloys. As a basis of experimental work several varieties of pig iron were used. The melts were made in crucibles, and all melts were analyzed for actual proportion of alloy retained. Pig irons of different analyses showed correspondingly changed effects. Some of the conclusions reached were that alloy scrap should never be used in making pig iron for malleable castings; that where alloy scrap is used for steelmaking and foundry pig iron, it would be a great advantage if the blast furnace would furnish the consumer the approximate alloy content; and that alloy scrap and plain scrap must be used in some form.

—STEEL 7-31-30

MISCELLANEOUS

Freight Traffic

Railroad freight traffic is found to be not as bad as a record of car loadings seems to indicate, in Business Week, July 23, p. 15

It is undeniably true that freight car loadings for the first half of 1930 were 9.4 per cent below those for the first half of 1929, but wide differences occurred in the way the slump affected different types of freight traffic. The movement of ore showed the largest decrease, 25.6 per cent. Statistics indicate that the railroad movement of bulk commodities and raw materials has declined more than that of finished merchandise, and reinforces the view that distribution has been less affected by business recession than production in the basic industries.

—STEEL 7-31-30

Grinding Wheel Safety

Modern developments in grinding wheel manufacture insure operators against accident if simple precautions are observed, by Fred B. Jacobs, in Abrasive Industry, August, p. 23, 2 pp.

Safety is built into grinding wheels by modern manufacturers, who test all wheels carefully and use great precautions in packing them for shipment. From that point it is up to the user. This article outlines briefly safety measures in grinding wheel operation.

The first step on the part of the user is to tap the wheel lightly. If it emits a clear ring it is sound. In mounting he should be certain that the wheel bushing is slightly larger than its arbor. Proper packing between wheel and flanges, and care in tightening flanges is stressed. Truing, proper peripheral speed, guards, safety flanges, ana wire webs are discussed. The old idea of hacking the periphery to assist free cutting is strongly condemned as an outworn and dangerous tradition.

—STEEL 7-31-30

Steam Turbines

Some economic considerations in the application of modern steam turbines to power generation in central stations and industrial plants, by A. G. Christie, in Mechanical Engineering, July, p. 673, 8 pp., 10 illusts., 2 tables.

The efficiency of a given type and size of turbine is regulated by competition and by advances in the art and design and construction. The trend of steam-turbine development in America has been progressively toward units of large capacity. Large turbines can be built for higher engine efficiencies than smaller units, and this leads to lower operating costs. Choice of the most economical steam pressure and temperature to use in a new turbine plant presents a difficult problem of the highest importance. Increased steam temperature tends to increase the cost of superheaters, main steam piping and the high-pressure section of the turbine.

—STEEL 7-31-30

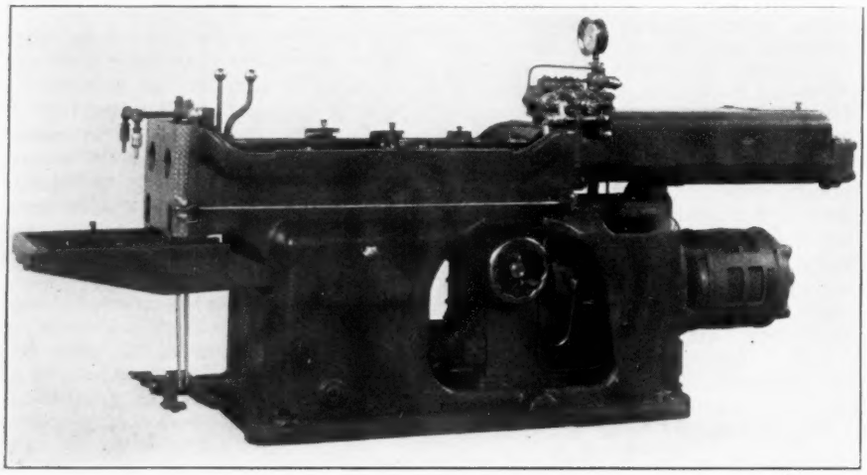
Machine Tools and Shop Equipment

"Without machine tools modern machinery could not be built."

—Joseph W. Roe

Broaching Machine Improved in Power and Accuracy

The Oilgear Co., Milwaukee, announces a new horizontal hydraulic broaching machine which is particularly adapted to high-speed broaching of automotive and aircraft parts demanding close limits of accuracy. A hydraulic multiple-plunger variable-delivery pump is the power unit and is built into the frame as an integral part of the design. The pump is flood lubricated, and all heavy thrust loads are carried on roller bearings. It gives a working pressure of 1000 pounds per square inch and will develop a peak pressure of 1250 pounds per square inch.



Hydraulically driven machine is particularly suited to fast, accurate broaching of automobile and aircraft parts

Efficiency Is High

The manufacturer claims efficiency of the pump at full stroke and load is 90 per cent, the flow is pulsationless, and displacement is practically positive against any resistance up to maximum capacity. Automatic relief and by-pass valves protect the mechanism, the tools and the work from overload.

The draw heads are screwed into the rams and are guided by bronze liners on hardened steel flat ways. The heads are adjustable 1¼-inch above or below the center line of the ram. The cylinders are of cast iron and the pistons are fitted with cast iron rings. The piston rods pass through stuffing boxes. The frame of the machine is designed to provide an ample reservoir for the coolant, which is delivered at the working points by a belt-driven gear pump at the rate of 14 gallons per minute.

A handwheel on the pump gives convenient speed control to the draw heads. The machine can be equipped for manual or combined manual and automatic operation—under manual control a double foot treadle at the front of the machine starts, stops or reverses the draw heads at any point in the stroke. Starting and stopping also can be accomplished by a hand lever on the control rod near the front of the machine. The stroke is automatically terminated at the end of the cut by an adjustable cam. Automatic control permits continuous operation of the draw heads.

Some general specifications of the machine are: Normal pull 12,000 pounds; peak pull 15,000 pounds; stroke 6 to 36 inches; pulling speed 48 to 396 inches per minute; distance between heads 10 inches; diameter of holes in face plate, 4 inches; distance between ways, 6 inches; horsepower of motor, ten; floor space required, 2 feet 8 inches x 10 feet; net weight with motor 4800 pounds.

Proper Motor Maintenance Is Promoted by Color

Reliance Electric & Engineering Co., Cleveland, has introduced a novel use of color in connection with direct-current motors which it manufactures. Recently there has been a marked tendency toward the adoption of color as a purely decorative feature of all sorts of industrial equipment, but in the case of the new motors color has a distinctly practical value.

The color in this case is a bright orange enamel which is applied to field and interpole windings, to the armature, and to the commutator insulating sleeve. The primary object is to make dirt readily apparent on these vital parts of the motor where it formerly did not show, and upon which its accumulation is decidedly harmful. This improved visibility encourages the prompt removal of foreign matter by maintenance men.

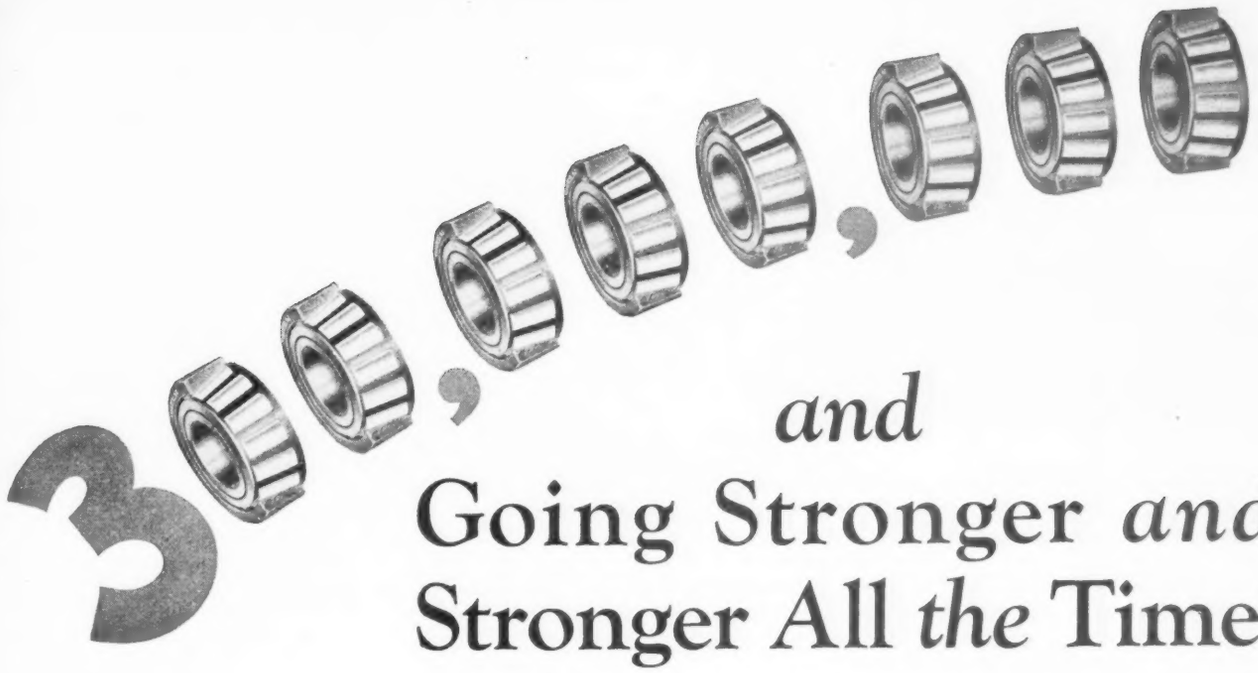
The enamel is tough and adherent, and being free from conductive solvents it has excellent dielectric properties, whether wet or dry. Therefore, it provides an extra measure of insulation, as well as increased resistance against water, oil and acid penetration.

◆

Slip Roll Former Is Built in Additional Size

Niagara Machine & Tool Works, Buffalo, has added a 4-inch diameter roll to its line of slip roll formers. This machine is particularly adapted to the forming of sheet metal cylindrical shapes such as blowpipes, bodies of steel drums and furnaces, and aircraft details.

An important feature of this machine is that a quick releasing mechanism permits the pivoting of the top roll so that work can quickly be removed by sliding it off over the free end of this roll. The operator, who works at the handle end of the machine, releases the top roll by a simple mechanism actuated by a knurled trigger. As the roll swings out, its bearing sleeve accompanies it, thereby protecting the bearing against damage. Bottom roll adjust-



300,000,000 *and* Going Stronger *and* Stronger All *the* Time!

ALREADY *three hundred million* Timken Bearings have been placed in service in all kinds of machinery, with the greatest satisfaction to manufacturers and users.

Three hundred million destroyers of friction, conservers of power and savers of lubricant.

Three hundred million carriers of radial, thrust and combined loads.

Three hundred million protectors of production and preservers of precision.

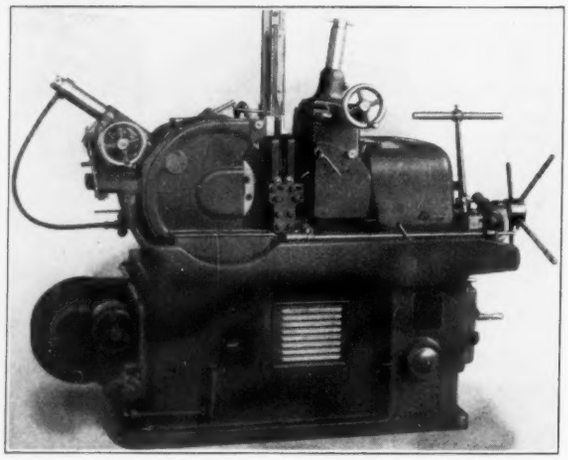
Three hundred million minimizers of maintenance and extenders of machine life.

Three hundred million mechanisms, ranging from a huge six-foot diameter steel mill bearing that is like a complete machine in itself, to intricate watch-like precision bearings for machine tool spindles . . . from big bearings that carry the tremendous weight and shock of railroad trains, to bearings that must endure where lack of attention is more rampant than anywhere else—in automobiles and trucks owned by average Americans.

And as all Industry turns to Timken for modern anti-friction assistance, "Timken Bearing Equipped" sweeps on and on, radically revolutionizing production and production costs, bringing to bear on Industry's toughest jobs an irresistible combination of mechanical advantages . . . a combination dedicated to the wiping out of Waste . . . the exclusive combination of Timken tapered construction, Timken positively aligned rolls and Timken-made steel.

A request will bring you complete engineering recommendations on the application of Timken Bearings to your products. The Timken Roller Bearing Co., Canton, Ohio.

TIMKEN *Tapered Roller* **BEARINGS**



Radial grooves, plus a unique "wabbling" motion of the feed wheel, make this centerless grinder a fast producer of perfect spheres

ment is by vise handled screws, which eliminate wrenches. These features are indicated in the illustration.

The rolls are of high grade steel turned and polished, and are available in 36, 48 and 60-inch lengths. Three grooves of varied widths are cut at the right-hand ends of the two bottom rolls to permit forming of work with outside wired edges. A full-length channel base of structural steel shapes gives permanent alignment and rigidity to permit metal of maximum thickness to be rolled at full speed. The machine is back geared, and all three rolls are positively driven, the train being arranged so that they are still in proper mesh when the upper roll is swung forward, or when the upper and lower rolls are separated for handling folded edges. All gears are of steel with cut teeth, the assembly being completely housed in a casing with easy lubrication provided.

The machine is furnished for hand operation, pulley drive or belted motor drive. A hardened steel reversing clutch is built into the power unit, and a convenient lever gives forward or backward motion to the rolls. The power unit, which is compact and self-contained, can be applied readily at any time to the hand operated machines Nos. 349, 351 and 353. A 2-horsepower motor running 1500-1800 revolutions per minute is required.

◆

Right Angle Attachment For Electric Drills

Millers Falls Co., Millers Falls, Mass., has introduced a right-angle attachment for use in connection with its No. 514 ¼-inch and No. 516 5/16-inch portable electric drills. This attachment, with various accessories designed for use with it, permits right-angle drilling and boring in cramped spaces, and also converts the portable tool into a sander, grinder and polisher, and transforms it for use as a circular hand saw.

The attachment is of sturdy construction and is ball bearing equipped. It is quickly attached by clamping down its split shank on the projection of the cap of the drill frame. Three speed ratios can be

Right-angle attachment for drills

furnished: fast 1½ to 1, medium 1 to 1, and slow, 1 to 1½.

According to the manufacturer this attachment on a No. 514 drill will drive an 11/16-inch brad point bit into hard pine. When fitted with a 6-inch saw it will crosscut 1¾-inch soft pine at 50 feet per minute and will rip soft pine at 23 feet per minute or hard pine at 21 feet per minute.

◆

Centerless Grinding Method Is Applied to Balls

Cincinnati Grinders Inc., Cincinnati, has developed a method of accurately finishing spherical work by centerless grinding. Fundamental principles which apply to all centerless grinding are employed, but the regulating or feed wheel has a special setting and both this and the grinding wheel are trued radially. A special collet permits mounting the regulating wheel at an angle of 12-degrees to the axis of the regulating wheel spindle. This produces a constantly varying inclination of the regulating wheel in respect to the grinding wheel axis as the regulating wheel spindle revolves.

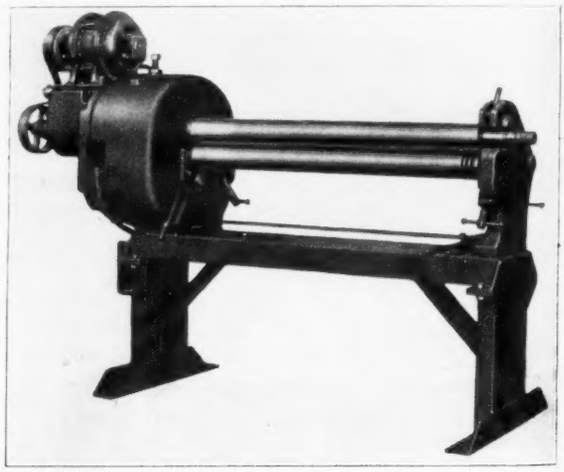
Thus far the method has been applied successfully to balls of hardened steel, cast iron, monel metal, glass, casein, hard rubber and bakelite, in diameters ranging from ¼ up to 4 inches.

The machine shown in the accompanying illustration is set up to grind 1-inch hardened steel balls. The work is placed by hand on two fingers of a hydraulic loading attachment. By a slight movement of a hand lever the hydraulic value is shifted, thereby lowering the work to the work rest blade between the grooved grinding wheel and the grooved regulating wheel. A continued movement of the same hand lever causes the in-feed slide to carry the work against the grinding wheel. To unload, the process is reversed, the finished ball being removed from the fingers by hand.

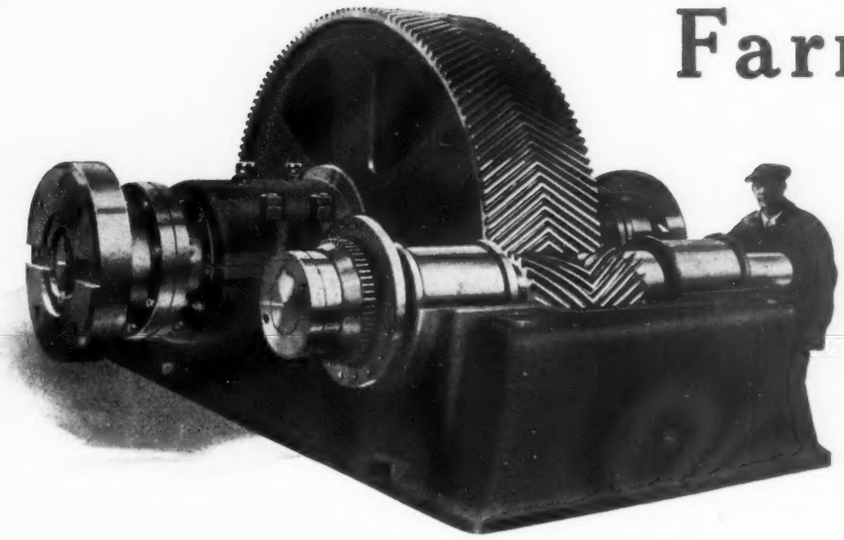
◆

New Drills Are Designed for Manganese Steel

Whitman & Barnes Inc., Detroit, now offers a special twist drill designed for drilling high-manganese



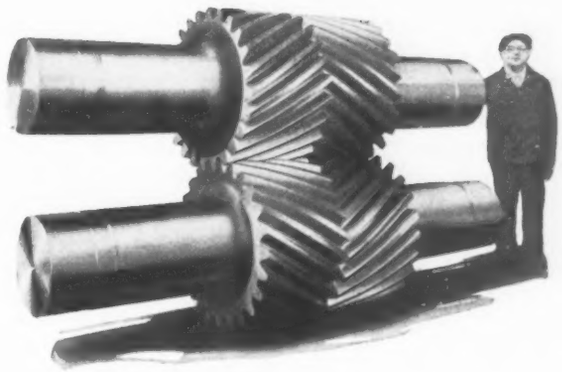
Manufacturers of sheet metal cylindrical shapes will find useful features incorporated in this slip roll former



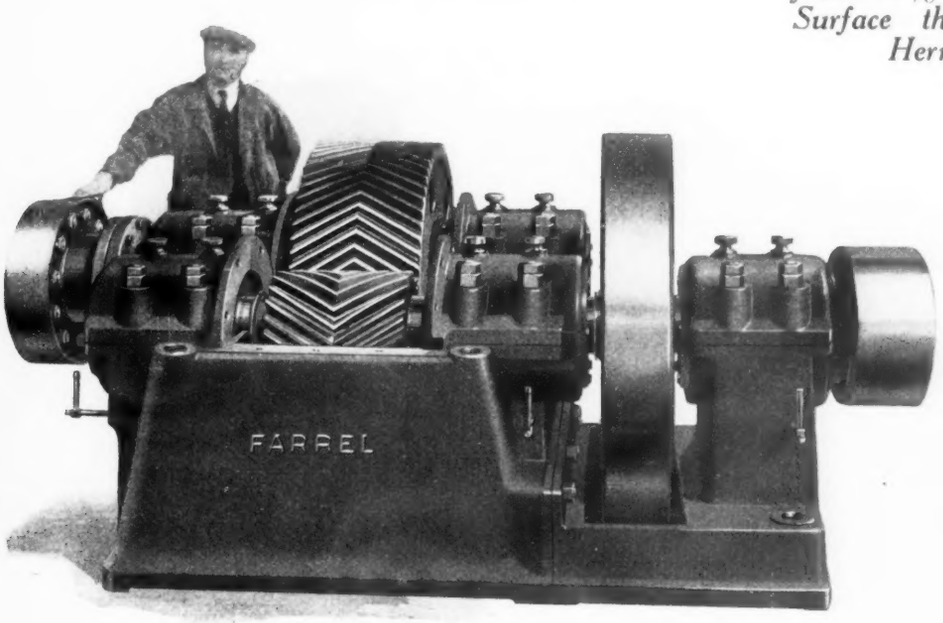
Farrel-Sykes

Rolling Mill Drives Eliminate All Possibility of Breakdowns

We have a complete series of Rolling Mill Drive Units designed to meet conditions in steel mills. Where standard drives cannot be used we design and build special units of different types to suit local conditions. Rolling Mill Drive Gears can be obtained up to 228″ Diameter, 54″ Face, 6″ C. P and Mill Pinions up to 60″ Face 6″ C. P in cast steel, forged steel or alloy steel, hardened and tempered. These accurately generated gears result in silence in operation and freedom from vibration.



About 60% More Strength and from 15%-40% More Bearing Surface than other types of Herringbone Gears



The "Gear with a Backbone"

FARREL-BIRMINGHAM COMPANY, Inc.

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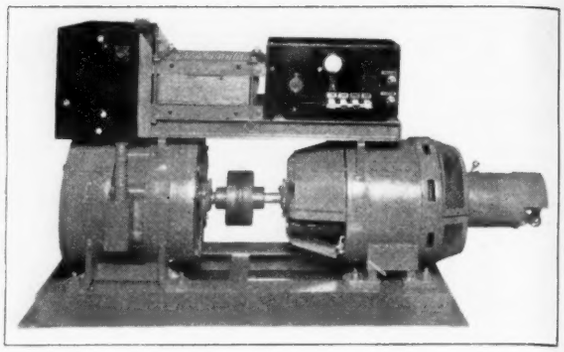
ADDRESS REPLIES TO THIS ADVERTISEMENT TO BUFFALO PLANT
344 VULCAN ST., BUFFALO, N. Y.

steel. This new drill is made of a steel high in cobalt and tungsten. The web is heavier and the twist is only two thirds the length of that of an ordinary taper shank drill. The point is given a 68-degree angle and the cutting lips are blunted in order to strengthen the cutting edge. The tools are heat treated in furnaces equipped with accurate timing and heat control devices.

The company points out that with increasing use of manganese steel in machinery parts economical drilling of this material on a production basis has become a serious problem. The new drills are said to have simplified this operation considerably.



Electric welding unit with current range from 180 to 750 amperes handles heavy electrodes and automatic carbon arc work

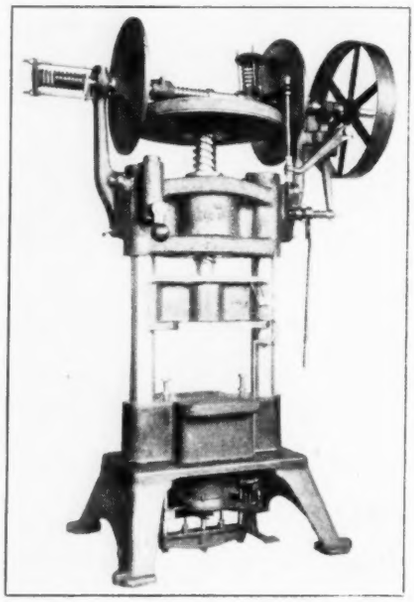
◆

New Oven Heater Promotes Economy and Safety

The Paul Maehler Co., Chicago, has introduced heating equipment for japanning ovens etc., which works on the principle of recirculation of heated air and at the same time accomplishes incineration of explosive vapors and gases.

The heater is located outside of the oven, and the low-pressure air is drawn from the top of the oven and through the heater by a high temperature suction fan located at the exhaust end of the device. In the heater drum the air temperature is revised by a visible burner flame. All explosive gases developed in the oven are incinerated in passing through this flame, which does away with the explosion hazard and assists materially in the heating process, at the same time saving fuel. The reheated air returns through the fan to the bottom of the oven. Slotted ducts are used at exhaust and delivery points, and the internal temperature is nearly uniform throughout the oven.

A visible pilot and automatic electric ignition are possible, and safety controls prevent fire or explosion in case gas or electricity should fail. The heater is built in oil-fired as well as gas-fired models. As a result of the incineration feature, about 150,000 B.t.u. are gained from every gallon of enamel distilled.



Percussion press speeds up molding

Fast Percussion Press Is Adapted for Molding

The Zeh & Hahnemann Co., Newark, N. J., announces a line of improved percussion presses designed for working light metal of large area; for the manufacture of floor and wall tile; for compressing grinding wheels, woodflour, clay, etc.; and for prepressing such materials as bakelite.

The press illustrated is of the pillar type, exerts a working pressure of 100 tons, is driven by a 5-horsepower motor and operates at the rate of 25 strokes per minute. It measures 30 inches between uprights and weighs 7500 pounds. Similar presses are made in 50 and 75-ton capacities. The work is removed from the dies by a high-speed pneumatic ejector.

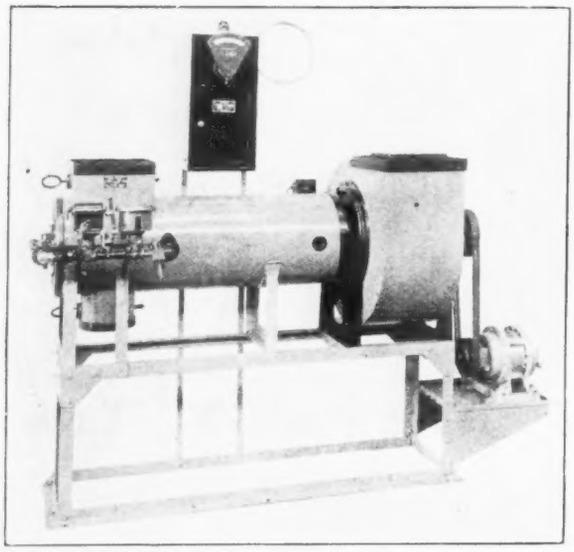
◆

Large Electric Welder Has 600-Ampere Rating

The Lincoln Electric Co., Cleveland announces a 600-ampere welder particularly designed for use with large-sized metallic and carbon electrodes, and to supply current for automatic carbon arc welding.

The machine, which is illustrated herewith, is a motor-driven variable-voltage unit of the single-operator type, with a current range of from 180 to 750 amperes. Motor and generator are direct connected, the mechanism of all controls is contained in a ventilated steel cabinet, and hand regulators and switches are mounted on a panel which forms the side of the cabinet. This control panel carries rheostat, diverter switch, safety starter switch, volt-ammeter, and wingnut terminals for cables.

The location of the control cabinet directly over the motor-generator not only permits easy access by the welding operator, but also permits armature removal without disturbing other parts of the unit. A feature of the instrument installation is the combined voltmeter and ammeter, which allows quick reading of both on one dial, and which stands up under the excessive ammeter service demanded by a welder.



Explosion hazard is eliminated by oven heater which incinerates inflammable fumes during recirculation process

Steel Demand Is Slightly Improved

Ship Needs, Reviving Auto Requirements, Fair Structural Awards, Higher Car Orders Encouraging—Pig Iron More Active—Warehouses Cut

OCCASIONAL unrelated high lights of demand vary the monotony of the slow market in steel and lend moderate encouragement to the expectation that with the end of July is passing the worst of the present lull.

Ship steel needs again loom importantly in the East. Plate mills at Chicago, already shipping heavily to pipe mills, have booked fair business in tanks for the Southwest. Structural steel awards are good for the season.

With the more important automobile manufacturers resuming next Monday, steel specifications to support a production rate comparable to late June are probable. Railroad car orders, while light, exceed those of June.

These developments, none of large tonnage promise, support the belief of steelmakers that slow improvement is in process, and reinforce the hope that August will be a better month than July and that September will continue the trend.

Steel prices continue irregular, with the possibility of concessions were warrantable tonnage to appear. Warehouses are in a period of adjustment, declines of $2 to $3 per ton being noted on bars, plates, shapes and strip.

Before eastern mills is potential ship business totaling 98,000 tons, including the two United States Line steamers each requiring 15,000 tons of plates and 7000 tons of shapes and bars, an airplane carrier for the navy involving 6500 tons of plates, and two or three ferryboats for New York each taking 1300 tons of plates. Six Grace Line steamers will require 7500 tons of steel each.

Western plate mills, operating at 80 per cent or 25 points above the district average, have closed 5000 tons for southwestern refineries, leaving 10,000 tons of tank work on inquiry. The Milwaukee welder of pipe will requires 45,000 tons of plates in August.

Structural steel awards this week are topped by 13,500 tons for a telephone building in New York and aggregate 39,100 tons, compared with 39,322 tons last week and 37,805 tons a year ago. The outlook for fall building, at this time, is substantially as bright as a year ago. Structural awards for 1930 to date, at 1,086,892 tons, are 17 per cent behind last year.

Wire, strip, sheets, alloy steel and other lines so largely dependent upon their automotive outlets continue quiet but with promise. Expected heavy increases in demand for roofing sheets for Southwest have been retarded by adverse weather. Milwaukee has enlivened the cast iron pipe market with a purchase of 6572 tons.

Car orders include 250 additional tank cars by the Gulf Refining Co., 400 refrigerator cars by the Canadian National and seven coaches by the Erie. It now appears that the Illinois Central may act in August on its inactive inquiry for 2300 cars. July freight car orders are expected to better the 998 placed in June. Chesapeake & Ohio has placed 58,600 tons of rails.

In widely scattered districts pig iron shows betterment. In the past two weeks more iron has been covered at Youngstown than in a like period this year, and protection for the remainder of the year is sought by some melters. Interest is also higher at New York and Buffalo. The market at Chicago is declining 50 cents, to $17.50, Chicago furnace. Scrap dealers increasingly are loath to sell "short."

Especially in the Middle West has heat been an operating handicap the past week, and there are some fears that crop damage will curtail agricultural buying power this fall. Steelmaking rates are little changed. Pittsburgh and Buffalo hold at 60 per cent, Cleveland is down from 60 per cent to 50, Chicago is down from 60 per cent to 57, while Youngstown is unchanged at 55 to 60.

Weakness in pig iron at Chicago and Philadelphia has lowered the market composite of STEEL five cents this week, to $33.09. This gives July an average of $33.21, compared with $33.53 for June and $36.71 for last July.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

This week (July 30, 1930)	**$33.09**
Last week (July 23, 1930)	**33.14**
One month ago (June, 1930)	**33.53**
Three months ago (April, 1930)	**34.44**
One year ago (July, 1929)	**36.71**
Ten years ago (July, 1920)	**68.29**

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	July 30, 1930	June, 1930	April, 1930	July, 1929
PIG IRON				
Bessemer, del. Pittsburgh	$20.26	20.76	20.76	20.76
Basic, valley	18.00	18.50	18.50	18.50
Basic, eastern del. eastern Pa.	18.25	18.75	18.76	19.85
No. 2 foundry, del. Pittsburgh	19.76	19.76	19.76	19.76
No. 2 foundry, Chicago	17.50	18.40	19.40	20.00
*Southern No. 2, Birmingham	14.00	14.00	14.00	14.40
**No. 2X, Virginia Furnace	18.25	18.25	18.25	20.00
**No. 2X, Eastern del. Philad	20.01	20.26	20.76	22.26
Malleable, valley	18.50	19.00	19.00	19.00
Malleable, Chicago	17.50	18.40	19.40	20.00
Lake Superior, charcoal, del. Chi.	27.04	24.04	27.04	27.04
Gray forge, del. Pittsburgh	18.63	19.13	19.13	19.13
Ferromanganese, del. Pittsburgh	103.79	103.79	103.79	109.79
*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12 to $13, Birmingham. **2.25 to 2.75 silicon.				
COKE				
Connellsville furnace, ovens	2.50	2.50	2.60	2.75
Connellsville foundry, ovens	3.50	3.50	3.50	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	31.00	31.25	33.00	35.00
Sheet bars, open-hearth, Pitts.	31.00	31.25	33.00	35.00
Billets, open-hearth, Pittsburgh	31.00	31.25	33.00	35.00
Wire rods, Pittsburgh	36.00	36.00	38.00	42.00

	July 30, 1930	June, 1930	April, 1930	July, 1929
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.65	1.75	1.80	1.95
Steel bars, Chicago	1.80	1.85	1.90	2.05
Steel bars, Philadelphia	1.94	2.04	2.12	2.27
Iron bars, Chicago	1.90	1.90	1.95	2.05
Shapes, Pittsburgh	1.65	1.70	1.80	1.95
Shapes, Philadelphia	1.66½	1.77	1.81	2.06
Shapes, Chicago	1.80	1.80	1.90	2.05
Tank plates, Pittsburgh	1.65	1.70	1.80	1.95
Tank plates, Philadelphia	1.80½	1.91	1.95	2.15
Tank plates, Chicago	1.80	1.80	1.90	2.05
Sheets, blue anl., No. 13, Pitts.	2.15	2.15	2.25	2.20
Sheets, black, No. 24, Pitts.	2.55	2.55	2.65	2.85
Sheets, gal., No. 24, Pittsburgh	3.15	3.20	3.30	3.60
Sheets, black, No. 24, Chicago	2.70	2.70	2.80	3.10
Sheets, blue anl., No. 13, Chicago	2.30	2.30	2.40	2.50
Sheets, galvanized, No. 24, Chi.	3.35	3.35	3.45	3.85
Plain wire, Pittsburgh	2.30	2.30	2.40	2.50
Wire nails, Pittsburgh	2.10	2.15	2.25	2.65
Tin plate, per base box, Pitts.	5.25	5.25	5.25	5.35
SCRAP				
Heavy melting steel, Pittsburgh	14.75	15.10	16.05	18.45
Heavy melting steel, eastern Pa.	12.50	13.25	13.95	16.50
Heavy melting steel, Chicago	12.00	12.05	13.00	14.75
No. 1 wrought, eastern Pa.	15.25	15.25	15.75	16.25
No. 1 wrought, Chicago	11.25	11.50	13.30	14.85
Rails for rolling, Chicago	14.50	14.55	15.00	17.50

Sheets

Market Reflects Little Change—Meager Consumer Stocks Indicate Brisk Action Later

SHEET PRICES, PAGE 65

Pittsburgh—Sheet makers believe demand is about due to bring considerable tonnages, basing this belief on lack of stocks in hands of consumers. Those serving the automotive trade are unable to cover future requirements until automobile builders have decided on their new styles. Previous attempts to anticipate have not resulted well and buying will await final determination by the automobile builders. Tin mill black sheets are easier at 2.70c to 2.80c, Pittsburgh. Long ternes No. 24 gage now are being quoted at 3.55c to 3.65c, Pittsburgh, per 100-pound box. Prices continue 2.45c to 2.55c, Pittsburgh, for black sheets; 1.95c to 2.15c for blue annealed, and 3.10c to 3.20c for galvanized.

New York—Leading sheet sellers point to a slow, steady gain in demand since June, with prices appearing firmer at recent levels. Galvanized sheets are 3.10c, Pittsburgh, to jobbers, and 3.15c to 3.20c to consumers. Black sheets are 2.45c to 2.50c, Pittsburgh. Blue annealed plates are 2.00c, Pittsburgh, and blue annealed sheets 2.15c.

Cleveland—Large sheet orders are lacking, while buyers continue to fill prompt needs. Nearly every consuming line is represented. Orders for Ford bodies and other parts are fairly active. Buying for Chevorlet cars is on a lower scale. The local body plant is operating at 50 per cent, so Chevrolet dealers will not be overstocked with this year's models. Metal furniture manufacturers continue to average 75 per cent operations. Some makers of office equipment are at 85 to 90 per cent. Demand for enameling stock for signmakers and electric refrigerator builders is good. Prices are unchanged.

Chicago—Sheet mill output remains restricted because of the prolonged heat wave. Production started the week at about 60 per cent. The expected increased demand for corrugated roofing sheets from the Southwest is slow to materialize, due in part to recent hot and dry weather. Fair demand exists for black sheets from miscellaneous manufacturers. Despite pressure against prices, producers report mill quotations unchanged on the basis of 2.65c for No. 24 black; 3.30c for No. 24 galvanized; and 2.10c for No. 10 blue annealed. Little third quarter contract tonnage is on the books.

Cincinnati—Sheet mills look to low inventories as a favorable factor. New business in some lines is slightly below expectation. Prices are steady.

Philadelphia—A marked improvemnt is noted in demand for sheets, esepcially from radio, automotive and oil interests. Jobbers still are buying sparingly. Stocks in the hands of consumers and jobbers are unusually low. Galvanized are 3.10c to 3.15c, base, Pittsburgh, subject to occasional concessions. Black are 2.45c to 2.50c, and blue annealed 2.00c and 2.15c for heavy and light gages, respectively.

Youngstown, O.—First signs of an awakening demand for black and galvanized sheets are noted. Mills specializing on full-finished grades are practically down. All sheet mills in Niles, O., and many in this city are idle, the number operating this week being 45 independent units out of a total of 120 in the district. While 2.45c, Pittsburgh, might be done in instances where mills are anxious for black sheets, 2.55c generally is asked by local mills. Autobody sheets are holding at 3.60c ,and galvanized at 3.20c.

St. Louis—Sheet specifications are slightly better than in recent weeks, though the volume of new business is disappointing. Makers of refrigerators and metal furniture are the most active consumers. Prices are steady.

Du More Tap & Tool Co., Detroit, has changed its name to Detroit Tap & Tool Co.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

SHEET MILL BLACK, NO. 24

Pittsburgh base	2.45c to 2.55c
Detroit, delivered	2.76½c to 2.81½c
Philadelphia, delivered	2.74c
Gary, Indiana Harbor	2.65c
Chicago, delivered	2.70c
Birmingham, base	2.70c
St. Louis, del.	2.97c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.70c to 2.80c
Gary, base	2.90c to 3.00c

GALVANIZED NO. 24

Pittsburgh, base	3.10c to 3.20c
Philadelphia, delivered	3.39c to 3.44c
Gary, Indiana Harbor	3.30c
Chicago, delivered	3.35c
Birmingham, base	3.35c
St. Louis, del.	3.62c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base*	1.95c to 2.15c
Chicago, district mills	2.25c
Chicago, delivered	2.30c
St. Louis, delivered	2.57c
Philadelphia, delivered	2.44c
Birmingham	2.30c to 2.35c

*Minimum price is for cont. mill.

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base*	1.70c to 2.00c
Chicago, district mills	2.10c
Chicago, delivered	2.15c
Philadelphia, delivered	2.29c
St. Louis, delivered	2.42c
Birmingham	2.15c to 2.20c

*Minimum price is for cont. mill.

AUTOMOBILE NO. 20

Pittsburgh, base	3.60c
Detroit, delivered	3.86½c

FURNITURE NO. 24

Pittsburgh	3.70c

Tin and Terne Plate

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.25
Gary, Ind., base 10 cents higher.	
Long ternes, primes, No. 24	3.55c to 3.65c

*Subject to quantity differentials.

Wire Products

(To Jobbers-Merchant Trade)
F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

Standard wire nails	$2.10-2.15 and 2.25
Cement coated nails	2.15 and 2.25
Galvanized nails	4.15 and 4.25

(Per pound)

Polished staples	2.60c and 2.70c
Galvanized staples	2.85c and 2.95c
Barbed wire, gal.	2.80c and 2.90c
Annealed fence wire	2.30c and 2.40c
Galvanized wire	2.75c and 2.85c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.30c
Spring wire	3.30c
Wire, delivered Detroit	2.53½c
Nails, delivered Detroit	$2.38½

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Cut Nails

Carloads, f.o.b. mills	2.45c
Less-c.l., f.o.b. mills	2.55c

Chain

PROOF BB AND BBB, Pittsburgh

3/16 to ½-inch	33 1/3 and 5 off
9/16 to 1½-inch	33 1/3 off

Steel Plates

Pittsburgh, base	1.65c to 1.70c
Philadelphia, del.	1.80½c to 1.85½c
New York, del.	1.88c to 1.93c
Boston, del.	2.05c
Chicago, base	1.75c to 1.80c
Cleveland, delivered	1.78½c to 1.88½c
Lackawanna, N. Y., base	1.80c
Birmingham, base	1.90c
Coatesville, Pa., base	1.75c
Pacific Coast, c.i.f.	2.15c to 2.25c
St. Louis, del.	2.12c
Detroit, del.	1.91½c to 1.96½c

Structural Shapes

Pittsburgh, base	1.65c to 1.70c
Philadelphia, del.	1.66½c to 1.76½c
New York, del.	1.75½c to 1.85½c
Boston, del.	1.88½c to 1.98½c
Chicago, base	1.75c to 1.80c
Cleveland, delivered	1.83½c to 1.88½c
Lackawanna, N. Y.	1.80c
Birmingham, base	1.90c
Pacific Coast, c.i.f.	2.25c
Detroit, del.	1.91½c to 1.96½c

Bars

SOFT STEEL

Pittsburgh, base	1.65c to 1.75c
Chicago, base	1.75c to 1.85c
Birmingham, base	1.90c
Lackawanna, N. Y., base	1.85c
Pacific Coast, c.i.f.	2.35c
Cleve. base, local mills	1.70c to 1.75c
Cleve., del. outside mills	1.75c
Philadelphia, del.	1.94c to 1.99c
New York, delivered	1.98c to 2.08c
Boston, delivered	2.05c to 2.15c
Detroit, del.	1.95c to 1.98½c
Pittsburgh, cold finish	1.80c to 1.90c
Pittsburgh, forg. qual.	1.90c to 2.00c

RAIL, STEEL

Chicago Heights	1.65c
Eastern mills	1.65c to 1.70c

IRON

Chicago, base	1.90c
New York, delivered	1.98c to 2.03c
Philadelphia, delivered	1.94c to 1.99c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.90c to 2.00c
Stock lengths, mill	1.65c to 1.75c
Chi. billet, over 500 tons	1.85c
30 to 500 tons	2.00c
Under 30 tons	2.45c
Chi., rail steel over 30 tons	1.50c
5 to 30 tons	2.10c
Under 5 tons	2.50c
Philadelphia, cut lengths	2.09c to 2.14c

Cold-Finished Steel

Bars, Pitts., Chi., Buff.	2.10c
Cleveland	2.00c to 2.10c
Do. delivered, Detroit	2.20c
Shafting (turned, polished) Pitts., Buffalo	2.10c
Shafting (turned, ground) mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel
Sheets 35c; plates 31c; bars 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	22c	23.5c	26c	31c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Alloy Steel

Hot Rolled—F.o.b. Mills
Alloy Quality Bar Base is 2.65c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	5100 .60-.90	
2100	0.55	Cr.	0.35
2300	1.50	5100 .80-1.10	
2500	2.25	Cr.	0.45
3100	0.55	5100 Chr.	
3200	1.35	spring.	0.20
3300	3.80	6100 Bars	1.20
3400	3.20	6100 Spring	
4100 .15-.25		Steel	0.95
Mo.	0.50	Chr., Ni., Van.	1.50
4100 .25-.40		Carbon Van.	0.95
Mo.	0.70	9250 (flats)	0.25
4600 .20-.30 Mo.		9250 (rds.,	
1.25-1.75 Ni. 1.05		sqrs.)	0.50

Strip, Hoops, Bands

Hot strip, to 6-in., Pitts.	1.75c to 1.80c
Delivered, Detroit	2.01½c
Hot strip 6 1/16 to 24-in., Pitts.	1.65c to 1.70c
Delivered, Detroit	1.91½c
Hot strip, bands 6 in. and under, Chicago	1.90c
Do. 6 1/16 to 24 in.	1.80c
Cooperage hoop, Pitts.	1.90c to 2.00c
Do. Chicago	2.00c to 2.10c
Cold rolled strip., Pitts., Cleve., 3 tons, over	2.45c
Delivered, Detroit	2.65c
Worcester, 3 tons, over	2.60c to 2.70c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 28.00
Light rails, 25-45, mills	$34.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.80c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.80c
Spikes boat, barge, Pitts.	3.00c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plates, mills	$41.50

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930 lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 73 off

MACHINE BOLTS

All sizes cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 off
Tire bolts ..... 60, 10 and 10 off
Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 10, 5, 2½ off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 off

***HEXAGON CAP SCREWS**

Milled ..... 80-10-5 off
Upset 1 in. diam. and smaller 85-10 off

***SQUARE HEAD SET SCREWS**

Milled ..... 85-5 off
Upset 1 in. and smaller ..... 80-10-5 off

*Discounts dated Jan. 23, 1930.

Sheet Piling

Base, Pittsburgh ..... 2.00c to 2.10c

Bars

Automotive Postponement Affects Market—Pittsburgh Sees Low Point in Market Activity

BAR PRICES, PAGE 65

Chicago—Bar mill schedules have been adversely affected this week by postponement of the reopening of the Ford plants. Mill operations now are under 60 per cent, with deliveries prompt on bars as well as other heavy finished products. Specifications for a foreign tractor order are expected soon, but otherwise tractor and implement demand is dormant. Road machinery and excavating equipment builders release fair specifications. Pressure against prices is less pronounced. The character of the tonnage now offered is less conducive to concessions than earlier in the season. Soft steel bars continue 1.75c to 1.85c, mills.

New York—Steel bars are 1.65c to 1.75c, Pittsburgh, with signs of improvement in buying. Most encouraging to sellers is the lack of stocks at consuming plants. Common iron bars are 1.65c to 1.75c, Pittsburgh.

Philadelphia—Steel bar demand has improved slightly, with jobbers ordering more material and users specifying more liberally. It is believed material due on third quarter contracts will be taken out because of the possibility of higher prices for fourth quarter. The current market continues 1.65c, base, Pittsburgh, subject to occasional differentials. In certain instances delivered prices are equivalent to slightly less, where large bars, particularly forging quality, are shipped at billet instead of finished steel freight rates.

Pittsburgh—The past fortnight in the experience of some soft steel bar producers has offered the lowest level of specifications during the present movement. This is regarded as possibly the bottom of the depressed period. Mills have considerable third quarter tonnage on books, mainly at 1.70c, Pittsburgh, with some at 1.65c, Pittsburgh. Producers profess themselves opposed to anything under 1.65c, Pittsburgh, as being below cost.

Cleveland—Prolonged absence of automotive buyers of merchant steel bars in large tonnages deprives the mills of tonnage expected to develop by this time. Some tractor, agricultural implement and miscellaneous machinery business as well as some jobber orders result in a fair aggregate tonnage each week. Outside mills quote 1.65c to 1.75c, Pittsburgh. Local mills quote 1.70c, Cleveland, for outside shipment and 1.75c, Cleveland, for local delivery.

Youngstown, O.—A little more bar business is coming to makers than in recent weeks which is enabling them to operate at a slightly increased rate. Bars are holding at 1.65c, Pittsburgh.

Is Awarded Sluice Gate

New York—Hardie-Tynes Mfg. Co., Birmingham, Ala., has been awarded the contract for one combination 5-foot by 10-foot by 4-foot sluice gate and operating mechanisms for uptake chamber No. 1, Hill View reservoir, by the board of water supply, New York. The gate, mostly cast steel and iron, calls for 36,000 pounds of castings while 6000 pounds are needed for operating parts.

Plates

Oil Refinery and Ship Work More Active—Large Shipments Start to Milwaukee in August

PLATE PRICES, PAGE 65

New York,—While plate prices are unchanged at 1.70c to 1.75c, Coatesville, Pa., equivalent to 1.88c to 1.93c, delivered, New York, the outlook is improved. Contemplated ship work is heavy. The navy is inquiring for an airplant carrier, requiring 6500 tons of plates. This city is contemplating the purchase of two or three ferryboats requiring 1300 tons of plates each. Early action is expected on the two vessels for the United States Lines, each requiring 15,000 tons of plates and 7000 tons of shapes and bars. A leading award requires 4000 tons of plates for several tanks, to be constructed in conjunction with the Standard Oil Co.'s Ajax pipe line development, this business going to the Chicago Bridge & Iron Works. Detroit opened bids July 29 on 2000 tons of 54 and 66-inch steel pipe. Eastern plate mills continue to operate at about 50 to 60 per cent.

Cleveland—Plate orders are small and 50 or 75-ton lots made up of many sizes can be had at 1.65c, Pittsburgh. One tank shop in the Youngstown, O., district is reported to have uncovered lower prices on a 2000-ton requirement. About 900 tons are pending for an elevated tank for Detroit. A lake steamer will require 5000 tons.

Chicago—Plate mill operations continue at about 80 per cent. A local fabricator has booked 4000 tons for oil refinery work in the Southwest, while other fabricators booked 700 to 1000 tons for oil storage roofing work in Oklahoma and other fields. About 10,000 tons of tank plates remain on inquiry. Plate shipments in August to the Milwaukee district welded pipe fabricator will amount to about 45,000 tons, much of it to be moved by water. Sizes specified for pipe line work are not conducive to high operation. Plate prices remain at 1.75c to 1.80c.

Philadelphia—Ship work features the plate market. Newport News Shipbuilding & Dry Dock Co. is low on three vessels for the Columbian Steamship Co., each requiring 3600 tons of plates, shapes and bars. Pusey & Jones Co. is low on one vessel for the Red D Line, requiring 2500 tons of plates, shapes and bars. The Grace Line is inquiring for six boats requiring 7500 tons of steel each, or a total of 45,000 tons, mainly plates. The Pennsylvania railroad placed 3000 tons of plates, shapes and bars for car material for its Altoona, Pa., shops, the order going to an eastern mill. Most mills continue to quote 1.75c, base, Coatesville, Pa., on plates, though 1.70c is done in some intsances.

St. Louis—Moderate improvement has developed for tank plates. Some tonnage is moving to the southern oil fields.

Birmingham, Ala.—Demand for plates is well sustained, some mills producing more tonnage than heretofore this year. Tank builders are active.

Contracts Placed

4000 tons, tanks, for Ajax pipe line development, Standard Oil Co. of New

Jersey, to Chicago Bridge & Iron Works, Chicago.

375 tons, four tanks, American Potash & Chemical Co., Trona, Calif., to Western Pipe & Steel Co., and Consolidated Steel Corp., both of Los Angeles.

260 tons, two stand pipes for Ambridge, Pa., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

220 tons, two stand pipes for Bath, Me., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

150 tons, sheet piling, office building, Broadbridge and Stone streets, New York, to Bethlehem Steel Co.

Contracts Pending

30,000 tons, two vessels for the United States Lines, previously noted; action expected shortly.

10,000 tons, 48-inch pipeline extension, Seattle; plans being completed, bidding in August.

6500 tons, airplane carrier for United States navy, bids asked.

2600 to 3900 tons, two to three ferryboats, New York; contemplated.

2000 tons, 36 and 42-inch welded steel pipe for Los Angeles; bids opened.

2000 tons, 54 and 66-inch steel pipe, Detroit, general contractors' bids opened July 29.

450 tons, one 1,000,000-gallon water tank, Johnson City, Tenn.; J. Allan Artz, City recorder, closes bids July 31.

1931 Metal Congress and Show To Be in Boston

The 1931 National Metal congress and exposition will be held in Boston, Sept. 21-25, according to a decision reached by the board of directors of the American Society for Steel Treating in a recent meeting. The exposition will be located in Commonwealth pier, as was the 1924 show when the society last convened in Boston.

Plans are shaping up speedily for this year's congress and exposition at the Stevens hotel, Chicago, Sept. 22-26. Representatives from the American Society for Steel Treating, American Welding society, American Society of Mechanical Engineers and American Institute of Mining and Metallurgical Engineers conferred in Atlantic City in June during the annual meeting of the American Society for Testing Materials to arrange and adjust technical programs of the various groups.

At this meeting agreement was reached that the National Metal exposition would be open only two evenings instead of three. The show will be open from 10 a. m. to 6 p. m. on Monday, Wednesday and Thursday, while on Tuesday and Friday the exhibits can be viewed between noon and 10 p. m.

Blue Ribbon Machine Co., Detroit, has decreased capital from $75,000 to $50,000.

Railroads

July Car Orders Probably Exceed June Total—Chesapeake & Ohio Buys 58,600 Tons Rails

TRACK MATERIAL PRICES, PAGE 65

New York—Car buying for July will be light, although probably showing a slight gain over June when 998 cars were placed by domestic lines. The placing of 250 additional tank cars by Gulf Refining Co. is outstanding.

Cleveland—Chesapeake & Ohio railroad is distributing orders for 58,600 tons of rails, which may be rolled yet this year. It is understood that 30,500 tons will be rolled by the Carnegie and Illinois Steel Companies, and 14,050 tons each by Inland Steel Co. and Bethlehem Steel Co.

Pittsburgh—Koppel Industrial Car & Equipment Co. was awarded 42 air-dump cars by Inter-State Iron Co., and 350 all-steel ore cars for shipment to Chile. The latter will require 3500 tons of steel and the former 1000 tons.

Chicago—Fair releases in small lots of rails and track fastenings were received in the last few days. An inquiry for about 9000 tons of rails is expected in this market soon from a western railroad in its 1931 primary rail program, although a part of the order may be delivered later this year. Track fastenings sales have been from 500 to 1000 tons weekly. Rail mill operations are below 50 per cent. Illinois Central will award its 2300 freight and miscellaneous passenger cars shortly after Aug. 1.

Birmingham, Ala.—Freight cars for Seaboard Air Line now being produced at the Bessemer, Ala., plant of Pullman Car & Mfg. Corp., 1000 cars constituting the order.

Car Orders Placed

Anglo-Chilean Consolidated Nitrate Corp., 350 all-steel ore cars, to Koppel Industrial Car & Equipment Co., Pittsburgh.

Canadian National Railways, 400 refrigerator cars, 200 to Eastern Car Co., New Glasgow, N. S., and 200 to the company's own shops at London, Ont., and Winnipeg, Man.

Erie, seven through line coaches, to Pullman Car & Mfg. Corp., Pullman, Ill.

Gulf Refining Co., 250 tank cars, 125 each to Petroleum Iron Works, Sharon, Pa., and General American Tank Car Corp., Chicago; orders duplicates one placed early this month with same builders.

Inter-State Iron Co., Calumet, Mich., subsidiary of Jones & Laughlin Steel Corp., Pittsburgh, 42 50-ton air-dump cars, to Koppel Industrial Car & Equipment Co., Pittsburgh.

LOCOMOTIVE ORDERS PLACED

Canadian Pacific, 10 V-5 class, heavy duty, 8-wheel switch and transfer locomotives, to Canadian Locomotive Co.

Reading, 10 locomotive tenders, to Baldwin Locomotive Works.

RAIL ORDERS PLACED

58,600 tons for Chesapeake & Ohio, 30,500 tons to United States Steel Corp. mills at Pittsburgh and Chicago, and 14,050 tons each to Bethlehem Steel Co., Bethlehem, Pa., and Inland Steel Co., Chicago.

6000 tons, rails and angles for Chilean interests, to Colorado Fuel & Iron Co., Denver.

Car Orders Pending

Illinois Steel Co., 95 ingot cars.

Tennessee Copper Co., 61 Broadway, New York, 50 7000-gallon acid tank cars.

RAIL ORDERS PENDING

500 tons, 60 and 80-pound rails for Seattle's municipal railway; bids Aug. 1.

Tin Plate Market Quiet; Prices Are Unchanged

Tin Plate Prices, Page 65

Pittsburgh—Producers of tin plate are operating intermittently, with demand almost absent and prices unchanged.

Aluminum Company Develops Light Piston Alloy

During the past eight years the Aluminum Co. of America has been developing an alloy for internal combustion engine pistons which combines light weight, low coefficient of expansion, high thermal conductivity and good bearing properties.

As a result they are now marketing an alloy of aluminum, nickel, copper and magnesium under the trade name "Lo-Ex." The coefficient of expansion of this new piston alloy is almost identical to that of the new cast iron-nickel alloy used for removable cylinder sleeves. This allows such pistons and sleeves to be fitted with the same small clearance as is given to cast iron pistons operating in cast iron cylinder blocks.

Structural Shapes

After Two Heavy Weeks Shape Award Total Declines to 38,607-ton Total—Telephone Building Addition, 13,500 tons, Leads--Inquiry Rate Holds—Prices Hold

STRUCTURAL SHAPE PRICES, PAGE 65

New York — Structural steel awards are topped by 13,500 tons for a telephone building addition. This is the largest commercial building let in several months, the second largest of the year. Several thousand tons are pending for state highway bridges in New York, Rhode Island, South Carolina and Virginia. Little subway work is expected out in August, possibly one section to be readvertised. The west side elevated road program is also uncertain. More tonnage is appearing for commercial building and apartments. First contracts are expected to be advertised in August for the elevated highway over New Jersey meadows with bridges over Hackensack and Passaic rivers. Prices on plain material are steady, but fabricated prices are still weak.

Boston—Heavy tonnages are in prospect and may be placed in August. Included are two buildings, 40 and 20 stories, respectively, on which general contracts went to H. K. Ferguson Co., Cleveland. Boston Bridge Works Inc. was awarded a 575-ton bridge at Lowell, Mass.

Buffalo—A large tonnage of structural shapes, as yet unestimated here, is about to be purchased at Detroit for the new Buffalo plant of Ford Motor Co.

Philadelphia—Shape demand is at an unchanged rate. This is about 15 per cent less than a year ago. Eastern shape mills operate 55 to 60 per cent. The price situation appears more stable but the market is unchanged at 1.60c to 1.65c, base, eastern mills, for plain standard material.

Pittsburgh—Although fabricators are busy estimating on a number of projects, few exceed 100 tons and there is practically nothing over 200 tons. Awards are almost entirely lacking and competition for pending business is unusually keen. No change in prices has taken place and plain shapes are quoted 1.65c to 1.70c, Pittsburgh.

Cleveland—Only a few jobs are up requiring 200 to 700 tons each. These include the Shaker Heights high school, general contract on which went to H. F. Juergens Co., stamping plant for Ohio Rubber Co., Willoughby, O., and an insurance company building at Van Wert, O. Mills report more active specifications last week than the week previous. The next large job to come along here is the Central-Lorain bridge, 11,700 tons, up for Aug. 6. The 1.65c, Pittsburgh, price is quoted on plain material but a fabricator naming that figure in a recent bid discovered himself to be $1000 high on a job taking about 700 tons, indicating a level between 1.55c and 1.60c. H. K. Ferguson Co., local general contractor, will buy steel here for two large buildings in Boston, involving $30,000,000.

Chicago—Structural mills operating around 60 per cent. Roll changes are made more frequent by the variety of sections being included in the shorter mill cycles. Prospects are fairly good for outlying territory. Bids were taken July 31 on a 3000-ton high school building addition in Chicago. Illinois highway department awarded general contracts for 1600 tons of bridge work. General contract was awarded for a 900-ton interstate bridge over the Mississippi river at Stillwater, Minn. An inquiry for a Kansas City museum calls for 1000 tons. Prices of plain material are reported steady on the basis of 1.75c to 1.80c, Chicago.

Birmingham, Ala. — Fabricating shops are active. Small 50 to 75-ton orders are numerous. Better feeling is expressed by officials. Operations are on a 5-day week basis.

Contracts Placed

13,500 tons, addition, Telephone building, Walker and Lispenard streets, New York, to A. E. Norton Inc., New York; Marc Eidlitz & Son, general contractors.

7300 tons, 27-story office building, Broad, Stone and Bridge streets, New York, to McClintic-Marshall Co., Pittsburgh; A. L. Hartridge Inc., New York, general contractor.

5000 tons, power plant addition, State Line Generating Co., Hammond, Ind., to McClintic-Marshall Co., Pittsburgh.

2200 tons, bridge, Virginia railroad, Kanawha river, Deep Water, W. Va., to Virginia Bridge & Iron Co., Roanoke, Va.

1000 tons, 16-story apartment, 144 East Forty-eighth street, New York, to Bethlehem Fabricators Inc., Bethlehem, Pa.; Lange Ogle Inc., New York, general contractor.

625 tons, 3-story factory, W. E. Moore Co., Pittsburgh, to McClintic-Marshall Co., Pittsburgh.

600 tons, theater, 615 South Broadway, Los Angeles, to Minneapolis Steel & Machinery Co., Minneapolis.

575 tons, bridge, Ludlow, Mass., to Boston Bridge Works Inc., Boston.

550 tons, theater, 609 South Broadway, Los Angeles, to Consolidated Steel Corp., Los Angeles.

500 tons, service station, Oklahoma Gas & Electric Co., Oklahoma City, Okla., to J. B. Klein Iron & Foundry Co., Oklahoma City.

500 tons, plant, Waterloo Mfg. Co., Waterloo, Ont., to Dominion Bridge Co. Ltd., Lachine, Que.

475 tons, women's gymnasium, University of Illinois, Urbana, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

450 tons, steel cylinder piers, for Atchison, Topeka & Santa Fe railroad, at Amarillo, Tex., to unstated fabricator.

400 tons, building, Virginia Electric Light Co., Norfolk, Va., to Virginia Bridge & Iron Co., Roanoke, Va.

400 tons, high school, Lyndenhurst, Long Island, N. Y., to Montgomery Iron & Steel Co., Philadelphia; Zerbe Construction Co., general contractor.

400 tons, various structural requirements, Chicago, Burlington & Quincy railroad, to Vierling Steel Works, Chicago, instead of 285 tons as noted last week.

365 tons, viaduct for Cincinnati Union Terminal Co., Cincinnati, to American Bridge Co.

300 tons, police station, Sixteenth precinct, New York, to unstated fabricator; R. J. Murphy, general contractor.

300 tons, highway bridge, Frederick Junction, Md., to American Bridge Co.

300 tons, Kress store, Honolulu, T. H., to Consolidated Steel Corp., Los Angeles.

300 tons, 6-story apartment, Forest avenue, Bronx, N. Y., to Empire Architectual Iron Works, Bronx, N. Y.

250 tons, high school, Wisconsin Rapids, Wis., to Wisconsin Bridge & Iron Works, North Milwaukee, Wis.

250 tons, state highway bridges, New York, to American Bridge Co.

225 tons, addition, 60 Broadway, New York, to American Bridge Co.

210 tons, highway bridge in Illinois, to Eagle Iron Works, Des Moines, Ia.

200 tons, shapes and ornamental iron work, school, Paterson, N. J., to New Jersey Fire Escape & Railing Co., Passaic, N. J.

200 tons, store, Fourth & East streets, San Rafael, Calif., to McClintic-Marshall Co., San Francisco.

200 tons, 3-story building, Hebrew infant asylum, New York, to

Awards Compared

	Tons
Awards this week	**38,982**
Awards last week	**39,322**
Awards two weeks ago	**56,757**
Awards this week in 1929	**37,805**
Av. weekly awards, 1930	**35,057**
Av. weekly awards, 1929	**42,213**
Av. weekly awards, June	**31,479**
Tot. awards to date, 1929	**1,289,451**
Tot. awards to date, 1930	**1,086,774**

George A. Just Co., Long Island City, N. Y.

189 tons, bank, Brookline, Mass., to New England Structural Co., Boston.

175 tons, apartments, East Nineteenth street and Seventeenth avenue, Brooklyn, N. Y., to Gaynor & Rosenblum, Brooklyn.

170 tons, apartment, Boston, to Boston Bridge Works Inc., Boston.

167 tons, Trinity river bridge, Trinity county, Calif., to Pacific Coast Engineering Co., Oakland, Calif.

156 tons, junior high school, Portsmouth, N. H., to New England Structural Co., Boston.

150 tons, state highway bridges, New Jersey, to Phoenix Bridge Co., Phoenixville, Pa.

132 tons, state hospital addition, Medical Lake, Wash., to Isaacson Iron Works, Seattle.

128 tons, five New England bridges, Boston & Maine railroad, to Boston Bridge Works Inc., Boston.

115 tons, state highway bridge over Juniata river, Pennsylvania, to American Bridge Co.

110 tons, addition, 45 East Thirty-third street, New York, to Berkshire Iron Works, Brooklyn, N. Y.; B. F. Butler, general contractor; carried last week as concrete bar award.

100 tons or more, bascule steel spans, Pleasure Pier bridge, Port Arthur, Tex., Southwest L. E. Myers Co., Dallas, Tex., to Petroleum Iron Works, Island Park, Beaumont, Tex., through J. B. Converse & Co., Mobile, Ala.

100 tons, branch, East New York Savings bank, 2644 Atlantic avenue, Brooklyn, N. Y., to Gold Seal Iron Works, Brooklyn; Caye Construction Co., general contractor; carried last week as concrete bar award.

Contracts Pending

7000 tons, second unit, New York-Cornell hospital, New York.

5300 tons, Lane technical high school, Chicago; bids in July 29.

4400 tons, Ford Motor Co. plant, Richmond, Calif., Herrick Iron Works, Oakland, Calif., low.

2000 tons, dormitory, Harvard university, Cambridge, Mass.

1600 tons, Illinois highway bridge work; general contracts awarded.

1500 tons, addition to Senn high school, Chicago.

1200 tons, loft building, Seventh avenue near Thirtieth street, New York.

1000 tons, Museum of Fine Arts, Kansas City, Mo.

845 tons, interstate bridge between Houlton, Wis., and Stillwater, Minn.; Peppard & Fulton Co., Minneapolis, low on general contract including all steel work and span, $247,201.95; structural steel bid, $0.05 per pound, same as second low bidder, Minneapolis Bridge Co., Minneapolis, with $277,777.77.

800 tons, loft building, Broadway and Thirtieth street, New York.

700 tons, public school No. 98, Douglaston, Queens, N. Y.; bids July 30.

700 tons, Shaker Heights, O., high school; general contract to H. F. Juergens Co., Cleveland.

675 tons, highway bridge work in South Dakota.

600 tons, highway bridges, New York state; approximately 2400 tons now pending.

500 tons, state highway bridges, South Carolina; bids in.

500 tons, theater, Warner Bros., Hackensack, N. J.

450 tons, addition, Bank of Italy, San Francisco; bids being taken.

300 tons, state highway bridges, Rhode Island; bids in.

300 tons, theater, Spokane; bids early in August.

209 tons, Children's hospital unit, Roxbury district, Boston.

150 tons, acid building, Merrimac Chemical Co., Everett, Mass.

114 tons, bridge, Frying Pan creek, Rainier national park, Washington; general contract to A. F. Berni, Portland, Oreg.

110 tons, state highway bridge, Virginia, bids in.

Unstated tonnage, plant at Buffalo, Ford Motor Co., Detroit; to be bought at Detroit.

Unstated tonnage, 20-story Professional Arts building, Stuart street, Boston, for W. J. McDonald financial interests, Boston; general contract to H. K. Ferguson Co., Cleveland; drawings out in few days; bids to be taken at Cleveland; ground to be broken about Aug. 1.

Unstated tonnage, 40-story New England building, Boston, for W. J. McDonald interests, Boston; general contract to H. K. Ferguson Co., Cleveland; drawings out in few days; bids to be taken at Cleveland; ground to be broken about Sept. 1; Blackall, Clapp Whittemore & Clark, Boston, architects.

Unstated tonnage, 12-story office building, Medical Arts Center Inc., Eugene, Oreg.; general contract to Hargreaves & Lindsay, Eugene; A. E. Doyle and associates, Portland, Oreg., architects.

Concrete Bars

Boston Lets 2000-ton Post-Office—Other Awards Fair—Inquiries Keep Up Well, Especially in Mid-West—700-ton Bridge Up at Cleveland—Rail Steel Lower

REINFORCING BAR PRICES, PAGE 65

New York—Concrete reinforcing bars are firmer on small lots. Shading continues on large tonnages. A good volume is up for figures. Contract for 645 tons for a subway section was split between National Bridge Works and Concrete Steel Co. A bridge at East Hartford, Conn., was placed, 150 tons. Considerable highway and state bridge work is up. Awards from 40 to 50 tons are more numerous.

Boston—The 2000 tons of concrete bars for the postoffice here went to McClintic-Marshall Co. A 650-ton subway station also was awarded. Otherwise lettings were small, aggregating about 200 tons.

Pittsburgh—Except for a few small tonnages, there is no demand for concrete reinforcing bars. Sellers in this district find it difficult to understand the sudden falling off at mid-season.

Cleveland—Bids go in tomorrow on the general contract for the Station road bridge job, Brecksville, O., taking 700 tons of concrete bars. Most other inquiries take a carload or less at a time, although Shaker Heights high school, general contract on which went to H .F. Juergens Co., takes about 300 tons. Quotations are on the basis of 1.65c, Cleveland or Pittsburgh.

Chicago—Fair reinforcing bar tonnage awarded last week, including close to 500 tons in additional road work. Among projects awarded in Chicago were four or five taking 100 tons or more, including a 200-ton grain elevator and a 150-ton infirmary. A recent report that 200 tons for a post office at Flint, Mich., had been awarded is declared erroneous, since the project still is pending. New prices announced for rail steel reinforcing bars are 1.50c for more than 30 tons; 2.10c for 5 to 30-ton orders; and 2.50c for orders under 5 tons, plus full extras.

Birmingham, Ala.—Shipments of reinforcing bars are active. Building and road contracts are taking fair tonnages. New business is in sight, projects being bid upon in several directions. One of the larger producers has sufficient business to last until October.

Awards Compared

	Tons
Awards this week	**6,192**
Awards last week	**9,873**
Awards two weeks ago	**3,362**
Awards this week in 1929	**7,378**
Average weekly awards, 1929	**5,849**
Av. weekly awards, 1930	**6,981**
Average weekly awards, June	**7,338**
Total awards to date, 1929	**197,870**
Total awards to date, 1930	**216,404**

Contracts Placed

2000 tons, postoffice, Boston, to McClintic-Marshall Co., Pittsburgh.

650 tons, Governor square subway station, Boston, to Kalman Steel Co., Chicago.

645 tons, subway section 8, route 108, Queens, N. Y., 430 tons to National Bridge Co. works, Long Island City.

(*Concluded on Page 72*)

Strip

Low Automotive Situation Holds Strip Demand Unimproved—Prices Are Steadier

STRIP PRICES, PAGE 65

New York — Sluggishness still dominates the strip market, although low stocks at consumers' plants give prices an element of strength. Wide hot strip is holding at 1.65c to 1.70c, Pittsburgh, and narrow at 1.75c to 1.80c. Cold strip ranges 2.45c to 2.55c, Pittsburgh, with the inside figure the more representative.

Worcester, Mass. — Cold-rolled strip steel is showing some upward movement, the gratifying feature being a resumption of orders. With the exception of territory adjacent to Philadelphia, movement has been general bringing July production higher than June. Prices are at bedrock at 2.60c. There is some sentiment that hot-rolled steel may advance soon.

Pittsburgh—Little change is seen in demand for strip steel, either hot-rolled or cold-rolled. Makers are awaiting renewed demand on the part of automotive manufacturers, which apparently will not come until new body styles have been determined. Prices are unchanged at 1.65c to 1.70c for wide hot-rolled and 1.75c to 1.80c, Pittsburgh, for narrow. Cold-rolled strip is steady at 2.45c. Less shading than recently is now apparent.

Youngstown, O.—Additional hot-rolled strip spesifications are being received by local mills which is having a tendency to harden the price to a minimum of 1.65c to 1.75c, Pittsburgh. No improvement yet appears in the demand for cold-rolled strip in the valley.

Cleveland—Recent improvement in strip steel is not sustained. Orders were fewer this past week. Automotive consumption still drags. Other consuming lines take small amounts and their orders are further apart. No concessions under 2.45c, Cleveland, are uncovered in cold strip. While buyers are bringing pressure to bear for price cuts in hot, producers continue to name 1.65c and 1.75c, Pittsburgh, on wide and narrow respectively.

Chicago—Cold rolled strip tonnage has fallen off slightly in this district. Postponement of the Ford reopening has held up releases. Mills are without backlogs. Cold-rolled strip quotations are based on 2.45c, Pittsburgh-Cleveland. Hot-rolled strip makers are operating at about 50 per cent, also being affected by the lack of Ford business at this time. Quotations are 1.90c, Chicago, for narrow sizes, and 1.80c for 6 to 24-inch material, concessions for attractive orders.

Philadelphia—Good business is reported in cold-rolled strip during the past week at 2.45c, Pittsburgh. Although specifications for hot strip are good there is very little business of a character to test the market and asking prices are 1.65c, Pittsburgh on 6 to 24-inch, and 1.75c on 6-inch and narrower.

Cold Finish Looks to Auto Demand Pickup in August

Cold Finished Prices, Page 65

Pittsburgh—Holding prices firmly at 2.10c, Pittsburgh, makers of cold-finished steel bars are feeling encouraged at the receipt of some additional automotive tonnage for August. Demand from other classes of consumers is only fair, as much of this product goes indirectly into motor construction.

Cleveland—Improvement in cold-finished bar buying is spasmodic. Consumers order as needed and sometimes defer placing their specifications on individual orders. The 2.10c, Cleveland, price is held here.

Semifimished Demand Slower; Prices Firm

Semifinished Prices, Page 76

Pittsburgh—Firmness marks quotations on semifinished steel, with billets, sheet bars and slabs at $31, Pittsburgh, and wire rods and forging billets at $36. The latter quotation is regarded as the bottom of this market and nothing below that figure has been suggested. Practically no new business is appearing except for occasional small lots for immediate conversion.

Philadelphia — Several hundred tons of billets were sold here in the past week at $31 to $32, base, Pittsburgh, for rerollers, and $36 to $37 for forging quality.

Youngstown, O.—The number of independent open-hearth furnaces active this week is 28 out of a total of 53, making the rate 52 per cent, unchanged from last week. Some sheet bars are coming into the upper valley from an adjoining mill district. Prices are steady.

Cleveland—Specifications for semi-finished steel show further slight recession. Consumers have not been placing contracts covering forward requirements, the main reason being the large carry-over many of them had on makers' books for the second quarter. The leading merchant producers here continues to operate eight of its 14 open hearths. Sheet bars, billets and slabs are $31, base, Cleveland or Youngstown.

Chicago—Shipments of semifinished material have fallen sharply. Quotations are nominal on the basis of $32, Chicago, for billets, blooms and slabs. The base price for forging billets is $37. Sheet bars are unchanged at $32, Chicago.

Bolts, Nuts Unchanged Though Large Order Looms

Bolt, Nuts and Rivets, Page 65

Pittsburgh—Improvement still is lacking in demand for bolts, nuts and rivets with the July tonnage moderately below that of June. Prices are well observed at 73 off for bolts and nuts, and 2.90c, Pittsburgh, for large rivets. Operations are sagging, currently averaging 40 to 45 per cent.

Chicago—Specifications for bolts, nuts and rivets remain slow, with producer output at 35 to 40 per cent. It is indicated heavier specifications will result for a Russian tractor order placed in this district. Structural rivets are quiet and unchanged at 3.00c, Chicago.

Cleveland—Nut, bolt and rivet manufacturers see no immediate change for the better in the demand for their products. They operate only 40 to 50 per cent. The 73 off quotations is held as is 2.90c, Cleveland on large rivets.

Iron Ore Shipments May Go Below 50,000,000 Tons

Iron Ore Prices, Page 76

Cleveland—Vessel shipments of Lake Superior iron ore in July totaled approximately 8,500,000 tons, compared with 8,650,441 tons in June and 10,670,882 tons in July, 1929. The July shipments brought the total for the season to Aug. 1 to 24,107,132 tons, a decrease of 27 per cent from the comparable figure of 1929. On July 1 the shipments this year stood 29 per cent below those of 1929.

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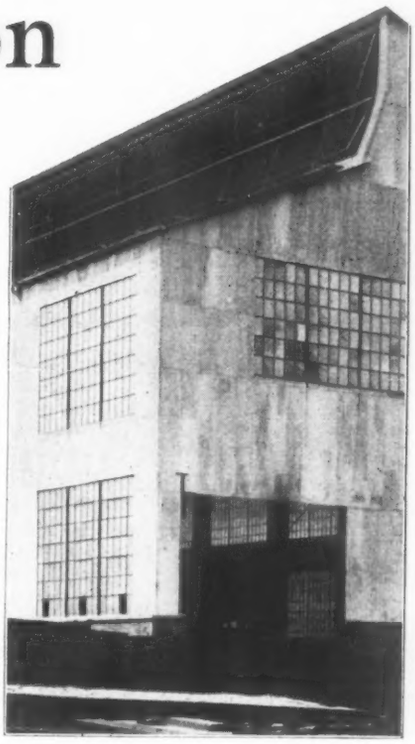

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Concrete Awards

(*Concluded from Page* 69)

N. Y., and 215 tons to Concrete Steel Co., Youngstown, O.; Slattery-Daino Co. Inc., general contractors.

425 tons, Veterans' hospital, Northport, Long Island, N. Y., to Concrete Steel Co., Chicago; Virginia Engineering Co., general contractor.

330 tons, Illinois road work, to Concrete Engineering Co., Chicago.

300 tons, postoffice, Brooklyn, N. Y., to Truscon Steel Co., Youngstown, O.; Pietrowski & Konop Co., Brooklyn, engineers.

260 tons, highway bridge, Mount-Pleasant-Rayland road, Jefferson county, O., to Electric Welding Co., Pittsburgh.

225 tons, pier D, Pennsylvania railroad, Jersey City, N. J., to Igoe Bros., New York; Terminal Development Co., general contractor.

200 tons, Massachusetts road work, Attleboro, Mass., to Northern Steel Co., Boston.

200 tons, grain elevator, Arcadia Farms Milling Co., at Chicago, to Calumet Steel Co., Chicago.

150 tons, bridge, East Hartford, Conn., to National Bridge Works, Long Island City, N. Y.

150 tons, Washington and Jane Smith home, 113th street and Western avenue, Chicago, to Calumet Steel Co., Chicago.

150 tons, West Fifty-third street bridge, Cleveland, Big Four railroad, to Bourne-Fuller Co., division, Republic Steel Corp., Cleveland; Freeman & Jones Inc., Cleveland, general contractor.

107 tons, oil house for Chicago, Milwaukee, St. Paul & Pacific railroad, to Olney J. Dean Co., Chicago.

100 tons, building, Abeyton Realty Corp., Mayfield and Lee roads, Cleveland Heights, O., to Paterson-Leitch Co.

100 tons, Trinity river bridge, Trinity county, Calif., to unstated interest.

100 tons or more, Walsh Memorial stadium, St. Louis university, St. Louis, to Kalman Steel Co., Chicago; Gamble Construction Co., St. Louis, general contractor.

100 tons, theater and office building, Milwaukee, to Kalman Steel Co., Chicago.

Contracts Pending

700 tons, Station road bridge, Brecksville, O.; bids in July 29.

420 tons, Sixth street viaduct, Los Angeles; general contract to Robert E. McKee, Los Angeles.

400 tons, addition to grain elevator for Chicago, Burlington & Quincy railroad, Council Bluffs, Iowa; general contract to Burrell Engineering & Construction Co., Chicago.

350 tons, highways and bridges, South Carolina; bids in.

300 tons, Shaker Heights, O., high school; general contract to H. F. Juergens Co., Cleveland.

300 tons, theater, 610 South Broadway, Los Angeles; bids being received.

277 tons, San Gabriel river bridge, Los Angeles county, Calif.; bids Aug. 13.

150 tons, Hill school gymnasium, Pottstown, Pa.

115 tons, water reservoir, State hospital, Fairview, Pa.

100 tons, bridge, Chester, Pa.

100 tons, 5-tier bridge across Ouachita river at Arkadelphia, Ark., Missouri Pacific railroad; general contract to List & Weatherly Construction Co., Kansas City, Mo.

Unstated tonnage, 44 miles of concrete road and 23 bridges for Missouri; bids Aug. 1.

Unstated tonnage, Glenmore reservoir, Calgary, Alta., including dam 910 x 61 feet high; G. B. Wood Ltd., Winnipeg, Man., low bidder at $727,437; Gore, Nasmith & Storrie, Toronto, Ont., are supervising engineers on this waterworks system to cost $3,770,000.

Empire State Building Now to Rise Quarter Mile

New York—Framework of the Empire State building, Fifth avenue and Thirty-fourth street, had scarcely reached the fortieth floor when plans were revised. This necessitated purchase of 2680 tons additional steel, awarded to McClintic-Marshall Co., Pittsburgh, as noted last week in STEEL. New plans carry the height to within 72 feet of a quarter mile from the street level, 1248 feet, the equivalent to 102 stories, one-fifth higher than anything built by man. The building is scheduled for occupancy May 1, 1931.

An observation gallery, 65 x 108 feet, will be located on the eighty-sixth floor. This will be sheathed in nickel and steel and glass. Above the gallery a 200-foot Zeppelin mooring tower will rise, topped by an airplane beacon. This mast is designed to resist wind velocity of 50-ton pressure at its apex.

Pipe Makers Jockey for Distributing Outlets

National Tube Co. and Spang, Chalfant & Co., Pittsburgh pipe producers, will have traded connections for the distribution of tubular products for oil and gas well use if stockholders of the Oil Well Supply Co., Pittsburgh, approve the sale of their company to the United States Steel Corp. which has an option, expiring Aug. 25, on the business.

National Tube lost its chief outlet for oil country goods recently when the National Supply Co. decided to provide its own source of supply of this material and currently is in the process of acquiring Spang, Chalfant. Two years ago Spang acquired a working agreement with the Oil Well Supply Co. in addition to a substantial stock interest in this company. Since that time Oil Well has distributed Spang's tubular products in the oil fields instead of National Tube's, which it previously had handled. Closing on the option the Steel corporation now holds will restore Oil Well Supply to its former status with relation to National Tube, but as in the case of the National Supply-Spang, Chalfant tieup this will provide a stronger connection than the former contract agreements.

The Oil Well Supply Co. is one of the largest manufacturers of machinery and supplies for drilling and operating oil and gas wells. It distributes tubular goods and sundries made by others through 99 branches and distributing points throughout the United States and Mexico and also has a number of plants in both countries for the manufacture of machinery and supplies such as boilers, engines, pumps, and drilling tools. Total assets of the company at the end of 1929 were $27,287,436. A year ago Oil Well Supply acquired the business and assets of the Wilson-Snyder Mfg. Co., Braddock, Pa., manufacturer of pumping machinery.

Manufacturers of gas and oil country goods usually have their special channels of distribution, through which their product moves to the specialized line of consumers. Thus, Jones & Laughlin Steel Corp. controls the Frick-Reid Supply Co., Pittsburgh, and also sells through the Jarecki Mfg. Co., and the Norvell-Wilder Supply Co. Republic Steel Corp. has its own distributing organization, the Republic Supply Co., andd Youngstown Sheet & Tube Co. owns a controlling interest in the Continental Supply Co. A. O. Smith Corp., Milwaukee, does not make oil country goods, in the usual sense, specializing in pipeline pipe, which it sells direct.

Reinforcing Steel Standards Revision Aids Industry

Revision of standard specifications for reinforcing steel by the American Society for Testing Materials recently, has aided the industry materially according to the Concrete Reinforcing Steel institute, Chicago. Paragraph 2 (a) of the specification has been removed. This read, "The structural steel grade shall be used unless otherwise specified." Removal of this requirement permits the acceptance of intermediate grade steel for concrete reinforcing.

The other important revision was the changing of the upper limit of the ultimate strength of intermediate grade from 85,000 to 90,000 pounds per square inch for both plain and deformed bars. At the same time the elongation requirements for intermediate grade were changed so that the minimum for plain bars is now 16 per cent and for deformed bars 14 per cent regardless of the ultimate strength of the steel. Raising the upper limit of intermediate grade in the new specifications allows acceptance of intermediate new-billet steel with an ultimate strength of between 85,000 and 90,000 pounds per square inch.

Innovations in steel design planned for the 6800-ton Majestic apartment in New York, awarded Hay Foundry & Iron Works, as noted in STEEL of July 24, include cantilever type of construction to eliminate steel columns at principal corners. This will allow more light and air for sun porches.

Statistics in Mixed Trend

(*Concluded from Page* 31)

lagging 22 per cent behind last year revealed in the following:

1929	Total	Oil storage tanks	Blast furnaces	Stacks & miscellaneous
June	45,918	6,890	1,003	26,200
(6 mos.)	284,813	76,060	5,761	120,796
July	48,968	14,963	2,650	20,988
Aug.	39,702	11,150	115	19,341
Sept.	41,653	15,189	200	16,123
Oct.	32,099	8,786	853	15,766
Nov.	42,295	9,033	1,019	14,601
Dec.	23,535	3,669	1,529	13,166
Total (year)	513,065	138,850	12,127	220,781
1930				
Jan.	50,076	7,432	1,042	15,168
Feb.	28,332	7,865	279	11,656
March	38,051	6,593	2,749	17,675
April*	39,437	8,460	273	17,698
May*	30,306	9,222	426	13,228
June	35,014	9,741	511	15,690
(6 mos.)	221,216	49,313	5,280	91,115

*Revised.

Steel Barrels at Low Mark

June showed the fourth consecutive month's decline in production, shipments and unfilled orders for steel barrels, according to statistics by the department of commerce. Figures follow:

1929	Production	Shipments	Unfilled orders within 30 days
June	774,853	779,567	644,079
Total (6 mos.)	4,251,024	4,244,967	.....
July	790,175	782,411	377,355
Aug.	806,574	809,860	358,150
Sept.	663,531	653,890	302,632
Oct.	629,976	638,681	298,550
Nov.	572,621	567,257	285,295
Dec.	624,365	618,003	294,797
Total, (year)	8,338,266	8,315,369	.....
1930			
Jan.	650,764	643,120	304,354
Feb.	648,709	643,324	313,349
March	842,186	856,451	452,933
April	769,061	766,617	322,161
May	731,087	736,147	*393,843
June	651,559	638,358	321,554
Total (6 mos.)	4,293,366	4,284,017	.....

*Revised.

Convention Date Is Changed

The third annual meeting of the Gray Iron institute will be held at the Hotel Cleveland, Cleveland, Oct. 8., instead of Oct. 15 as previously announced by the institute. The date of the meeting was changed because considerable activity in Cleveland on the latter date makes the change advisable in order to provide sufficient hotel accomodations.

Pipe

Milwaukee Buys 6572 Tons—Eastern Utilities Active in Inquiries—Steel Pipe Quiet

PIPE PRICES, PAGE 87

New York—Utilities are more active for second half requirements, about 7000 tons, mostly 24-inch, being up. Some was bought this week, Lodi, N. J., placing the general contract for 2400 tons after rejecting former bids. Mountain Lakes, N. J., Bloomfield, Conn., and Amherst, Mass., issued inquiries. Donaldson Iron Works booked more than 1000 tons. Prices are steady at $36 and $37, eastern and southern foundry, few bids being lower. Small lot orders are fewer. Backlogs have been reduced, although two eastern foundries at least have good books on large sizes.

Boston—Most pipe orders are in single carloads. Prices continue to show weakness. Central Maine Power Co., however, awarded 250 tons to Warren Foundry & Pipe Co., which also was awarded 100 tons by a Massachusetts manufacturer. A like tonnage went to Donaldson Iron Co.

Pittsburgh—Except for mill activity in producing pipe for oil, gas and gasoline lines, which is in unusual volume this summer, little tonnage is moving. No new pipe lines are being figured at present.

Cleveland—Demand for standard full weight merchant pipe in small lots, 30 to 100 tons at a time, is fairly well sustained. The jobber turnover is considered good for this season. Three or four carloads of pipe are involved in the order placed with W. M. Pattison Supply Co., by the city, for safety zone standards. Several hundred tons of pipe, conduit, etc., for the Higbee Co. department store in terminal group remains up.

Chicago—Milwaukee's award of 6572 tons of 54-inch and 20-inch cast water pipe to United States Pipe & Foundry Co. is the only important order closed last week. A sprinkling of private buying through contractors developed. Grosse Pointe, Mich., purchased about 200 tons of various sizes of cast pipe for pump house needs. Chicago delivered prices for large diameters cast pie are unchanged at $45.20 to $46.20.

Milwaukee—This city has accepted bids of United States Pipe & Foundry Co. on 6572 tons of cast pipe and 225 tons of special castings.

Birmingham, Ala.—Southern municipalities and communities are planning further pipe purchases. A little business is coming in, sufficient to warrant fairly steady production. Month's operations compare favorably with June's but orders on hand are much lower.

Contracts Placed

6572 tons cast pipe for Milwaukee including 100 tons class C plain 20-inch at $39.20; 6247 tons class C plain 54-inch at $39.20 and 225 tons 54-inch lugged at $49.20, with 207 tons, 20, 30, 36 and 54-inch special castings at $135 per ton, to United States Pipe & Foundry Co., East Burlington, N. J. American Cast Iron Pipe Co., Birmingham, bid $45.40 on first item; Glamorgan Pipe & Foundry Co., Lynchburg, Va., bid $45.40 on first item and $150 on castings; James B. Clow & Sons, Chicago, bid $46.40 on first item.

3000 tons, 24-inch cast pipe for an Ohio utility interest, to National Cast Iron Pipe Co., Birmingham, Ala., and other foundries.

800 tons, 12-inch cast pipe, for Richmond, Staten Island, N. Y., to Donaldson Iron Works, Emaus, Pa.; Empire Contracting Co., general contractor.

500 tons, 6-inch centrifugal cast pipe for Vancouver, B. C., to Canadian manufacturers; Evans, Coleman & Evans, Vancouver, general contractor.

250 tons, 6 to 36-inch cast pipe for Central Maine Power Co., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

100 tons, 14-inch cast pipe for a Massachusetts manufacturer, to Warren Foundry & Pipe Co., Phillipsburg, N. J.

100 tons, 10-inch cast pipe for Braintree, Mass., to Donaldson Iron Co., Emaus, Pa.

100 tons, monocast pipe for miscellaneous work near Seattle, to American Cast Iron Pipe Co., Seattle.

Unstated tonnage 4100 feet, 14 and 16-inch cast pipe for Westchester county sewer construction, to Donaldson Iron Co., Emaus, Pa.; Nardone Construction Co., general contractor.

Contracts Pending

2400 tons, 24-inch cast pipe for Lodi, N. J.; J. Dominguez, general contractor, former bids rejected.

1000 tons, 24-inch cast pipe for Associated Gas Interests through Reading, Pa., buyer.

771 tons, 6 and 8-inch class 150 for San Francisco; American Cast Iron Pipe Co., Birmingham, Ala., low.

301 tons, 4 to 8-inch class C, improvement of La Joilla street, San Diego, Calif.; bids Aug. 11.

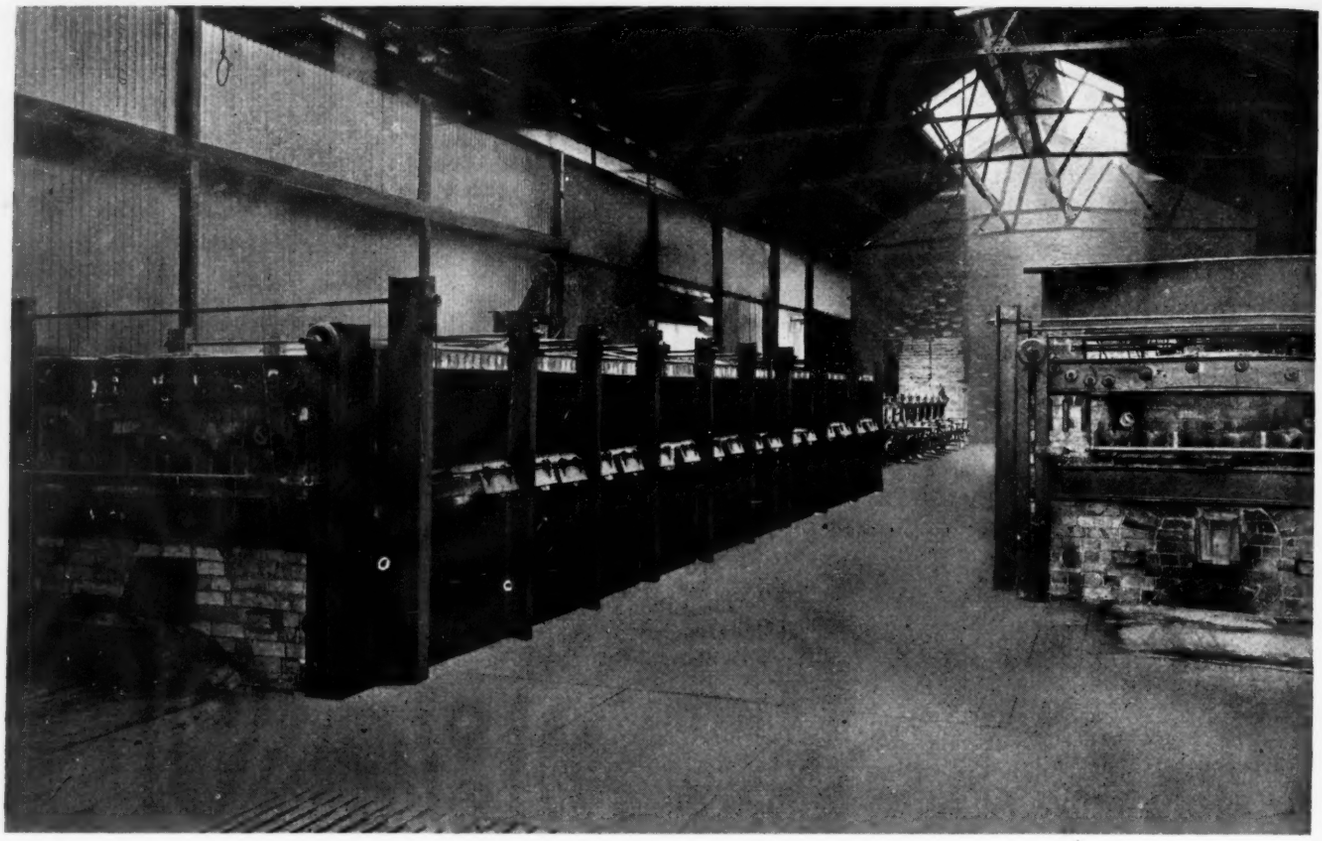
260 tons, 6 and 10-inch class 150 for San Francisco; United States Pipe & Foundry Co., East Burlington, N. J., low.

226 tons, 30-inch class C for Whittier, Calif.; bids Aug. 4.

Unstated tonnage, 16,000 feet, 8 and 10-inch cast pipe for Amherst, Mass., G. Ferullo, Boston, general contractor.

Unstated tonnage, 1200 feet 6-inch, 950 feet 8-inch and 225 feet 3-inch cast pipe for Bloomfield, Conn.

Unstated tonnage, 4350 feet various sizes cast pipe for Mountain Lakes,



Wire Patenting Furnaces

Gas Fired on Recuperative Settings

Wire "Patenting" in these furnaces give high results on torsion and elongation tests, and above all satisfies the test of the most exacting consumer.

ECONOMY IN FUEL
POSITIVE CONTROL OF ATMOSPHERE

permits temperature to be increased or reduced uniformly as may be desired when handling different sizes of rod or wire at varying speeds.

UNIFORM CONTROLLABLE HEATING OF WIRE

H. L. DIXON CO., P. O. Box 140, **Pittsburgh, Pa.**

ENGINEERS — MANUFACTURERS — CONTRACTORS

Works (Carnegie, Pa.)

N. J.; bids in.
Unstated tonnage, 700 lineal feet 10-inch wood and 8-inch cast pipe for Wardner, Idaho; Bunker Hill & Sullivan Co., general contractor.

Operations Trend Down at Chicago, Cleveland

Chicago — Ingot output, due largely to hot weather, has been reduced further during the week and now is at about 57 per cent. Seventeen of the 36 steelworks blast furnaces in the district are blowing. The leading interest has 11 of its 27 active. The inactive stocks include four banked, three at Gary and one at South Chicago: Plate mills remain at about 80 per cent, other finishing mill operations being below that rate.

Pittsburgh—Little change has taken place in steelmaking operations, sheet production being at about 47 per cent of capacity and tin plate mills at about 67 per cent. Strip mills and pipe makers are continuing 40 and 75 per cent, respectively, unchanged from last week.

Buffalo—Steelworks continue to operate at the 59 per cent rate established in mid-July. Works managers think a continuation of this rate early in August is probable.

Youngstown, O.—Ingot capacity is engaged unchanged with 28 of the 51 independent open-hearth furnaces active. Bessemer production is at 60 per cent and Corporation steel output at 55. Of 120 independent sheet mills, 45 will operate during the week. The three Empire Steel Corp. plants at Niles and the sheet mill division of Sharon Steel Hoop Co. will be entirely idle. Strip mill capacity will be about 55 per cent engaged and tin plate mills will operate at 70, which, however, may be affected by continued hot weather. Pipe and strip operations are well maintained at about 70 per cent. Independent bar mill operations are at 50 and those of the Corporation at 60.

Cleveland—After last week's ten-point rise, operations have receded again this week to 50 per cent of capacity with 17 of 34 open hearths on. The Steel corporation in its American Steel & Wire Co. unit maintains the highest percentage with 5 of 7 pouring.

Birmingham, Ala.—Thirteen open-hearth furnaces and 14 blast furnaces are in operation in this district. Finishing mills operation brings total of steel operations to between 60 and 65 per cent.

Wire

Volumes Steady but Slow—Concessions Often Make Minimum Price Quotations

WIRE PRICES, PAGE 65

Chicago—Western wire mills nave picked up slightly more merchant tonnage with no marked upturn in any line. Woven fencing business remains slow. Pressure of buyers for lower prices is active. Relatively few third-quarter contracts have been signed. Manufacturers' wire tonnage is light. Minimum quotations for wire nails now are $2.15, Chicago or western mills. Annealed fence wire remains at 2.35c to 2.45c.

Worcester, Mass.—Little change is apparent in the market. Demand for manufacturers wire is small at 2.40c, base, Worcester. Automobile accessory shops have slackened their demand and specialty wire is weak.

New York—A leading manufacturer of nails has established a firm $2.05, Pittsburgh, base, on carloads to jobbers and $2.15 to retailers. However, this product continues to move slowly, with jobbers buying from hand to mouth. Bright wire remains fairly steady at 2.30c, Pittsburgh, although buying of this product is slack also.

Pittsburgh—Demand for wire and wire products continues slow but in fairly steady volume with the price unchanged at 2.30c, Pittsburgh. Lack of automotive demand is felt deeply. Nails are in an uncertain position, with $2.15, Pittsburgh, adhered to for delivery in that market and concessions general in other districts. It is understood some business has gone as low as $2.05 to Eastern consumers. In the present condition of the market many producers are soliciting carload trade and as a result dealers and jobbers are largely on the same price basis at $2.15.

Cleveland—Jobber buying of wire products is just about holding its own. One day will show slight improvement. The next will witness a decline. While some nails have been sold at $2.10, Cleveland, the $2.15 price is held by local makers. Large wire users have not yet increased their specifications.

Warehouses Reduce Prices on Heavy Steel Products

Warehouse Prices, Page 87

Pittsburgh—Prices of bars, shapes and plates have been reduced 15 cents per 100 pounds. Hoops, bands, and blue annealed plates are off a similar amount. Business is steady at a rather low rate.

New York—While jobbers look for no material improvement much before September, they believe the dullest period of summer has been passed. Prices are unchanged.

Buffalo—Warehouses report a featureless market. No improvement is being shown over second quarter averages. Mill schedules permit quick shipments of small orders.

Philadelphia—Warehouse market continues unchanged and volume is only fair. Jobbers are somewhat more active in soliciting carload business in competition with the mills.

Cincinnati—Reduction of $3 a ton on steel, iron and reinforcing bars, shapes, plates, bands and hoops has been put into effect in warehouses here. The old prices stood unchanged since 1924. Tonnage this month will likely parallel that of June.

Chicago — Western warehouses have attempted to adjust spreads in mill and jobbing prices of some of the hot-rolled heavy steel products by a reduction of $2 a ton, effective July 23. Products included in the price cuts are bars, plates, shapes, hoops and bands. St. Paul and Minnesota warehouses reduced similarly, but St. Louis jobbers are unchanged. Most Chicago warehouses likewise have reduced wire nails to $2.30 per base keg.

St. Louis—Purchasing remains generally backward. Some favored materials for road and engineering work are fairly active, but such items form the exception. Prices, however, remain steady.

Cleveland—General price cuts on steel products are announced effective Aug. 1., affecting bars, plates, shapes, bands, hoops and blue annealed sheets. Cuts are mostly 15 cents 100 pounds.

R. M. Smith, Rockford Screw Products Co., was recently elected chairman of the Rockford, Ill., chapter of the American Society for Steel Treating. Other officers are: Vice chairman, Charles Cotta, Cotta Gear Co.; and secretary-treausrer, O. T. Muehlemeyer, 700 Race street.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY NO. 2

Chicago, furnace	$17.50 to 18.00
Pittsburgh, district fur.	18.50
Pittsburgh, delivered	19.13 to 19.63
Valley, furnace	18.00
Cleveland fur., local del.	18.00
Philadelphia, delivered	19.26 to 19.76
Virginia, furnace	17.75
Granite City, Ill., fur.	18.50 to 19.00
Buffalo, fur., local del.	18.50
Buffalo, del. Boston	21.41 to 21.91
Buff., all-rail Brooklyn	20.91 to 21.41
Buff., all-rail, Newark	19.28 to 19.78
Ala., Bir. fur., local del.	14.00
Alabama, del. Chicago	18.01
Alabama, del. St. Louis	17.42
Alabama, del. Cincinnati	16.19 to 17.19
Alabama, del. Cleveland	18.51 to 19.01
Ala., Phila., dock del.	17.25 to 18.25
Ala., Balt., dock del.	17.00 to 18.00
Alabama, New York dock	18.00 to 18.50
Ala., Boston dock del.	20.21
Tenn., Bir. base, local del	14.00
Tennessee, del. Cin.	16.19 to 17.19
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	19.00
Buff., all-rail, Brooklyn	21.41 to 21.91
Buffalo, all-rail, Newark	19.78 to 20.28
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del., Phila.	19.76 to 20.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	20.00
Eastern, del., Phila.	20.26 to 20.76

MALLEABLE

Chicago, furnace	17.50 to 18.00
Cleveland fur., local del.	18.00
Pittsburgh district fur.	19.00
Pittsburgh, delivered	19.63 to 20.13
Valley furnace	18.50
Buffalo fur., local del.	19.00
Eastern Penna., delivered	19.26 to 20.91
Granite City, Ill., fur.	18.50 to 19.00
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh dist. fur.	18.50
Pittsburgh, delivered	19.13 to 19.63
Eastern Penn., del.	18.00 to 18.50
Buffalo fur., local del.	18.00
Montreal, delivered	22.50
Valley furnace	18.00

BESSEMER

Valley furnace	18.50
Pittsburgh, delivered	20.26

LOW PHOS

Valley fur., standard	27.00
Philadelphia, standard	24.26 to 24.76
Furnace, copper-bearing	23.00 to 23.50

GRAY FORGE

Pittsburgh district fur.	18.00
Pittsburgh, delivered	18.63 to 19.13

CHARCOAL

Lake Superior, del. Chicago	27.04

SILVERY

Jackson County, O., fur., in per cents 5—$21.50; 6—$21.50; 7—$22.00; 8—$22.50 to $23.00; 9—$23.00 to $24.00; 10—$23.50 to $27.00; 11—$24.50 to $28.00; 12—$25.50 to $30.00; 13—$26.50 to $32.00.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents 10—$29; 11—$31; 12—$33; 13—$35; 14—$37; 15—$39; 16—$42; 17—$45.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.50 to 2.60
Connellsville foundry	3.50 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ov., Connell. basis	5.50
Portsmouth, O., ov., Connell. basis	5.50
Buffalo ovens	8.75
Detroit ovens	8.50
Philadelphia, del.	9.00

Iron Ore

LAKE SUPERIOR ORE

Gross Ton, 51½%, Lower Lake Ports

Old range	$4.80
Mesabi	4.65
Old range	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58.65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	10.50 to 11.00
North African low phosphorus	10.50
Swedish basic, 65%	9.50 to 10.50
Swedish low phos.	11.00
Spanish, North African basic, 50 to 60%	9.50 to 10.00
Newfoundland fdy., 55%	9.00
Tungsten, spot and future, short ton unit, duty paid	$11.75 to 12.00
Chrome ore, 48%, net ton c.i.f.	$21.50 to 22.50

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55%	30 cents
Indian, 48-50%	30 cents
Brazilian, 46-48%	28 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$43.00
Georgia, Alabama	40.00 to 47.00

Second Quality

Pennsylvania, Ohio, Illinois Kentucky, Missouri, Maryland	35.00 to 38.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham, Ala.	50.00 to 51.00

MAGNESITE BRICK

Per net ton

9 x 4½ x 2½	65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore base	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$31.00
Pittsburgh, bessemer	31.00
Youngstown	31.00
Cleveland	31.00
Philadelphia	36.30 to 37.30
Chicago	32.00
Forging, Chicago	37.00
Forging, Pittsburgh	36.00
Forging, Philadelphia	41.30 to 42.30

SHEET BARS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00
Chicago	32.00

SLABS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00

WIRE RODS

Pittsburgh, Cleveland	$36.00
Chicago	37.00

SKELP

All grades, Pittsburgh	1.70c to 1.75c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$99.00
*Ferromanganese, del. Pittsburgh	103.79
Spiegeleisen, 19-21%, domestic fur. spot†	33.00
*Ferrosilicon, 50 per cent, freight all., c. l.	83.50
*Do, less carload	88.50
Do, 75 per cent	13.00 to 15.00
Ferrochrome, 66-70 chromium, 4-6 carbon. cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.10
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	160.00
Do. one ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton, carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

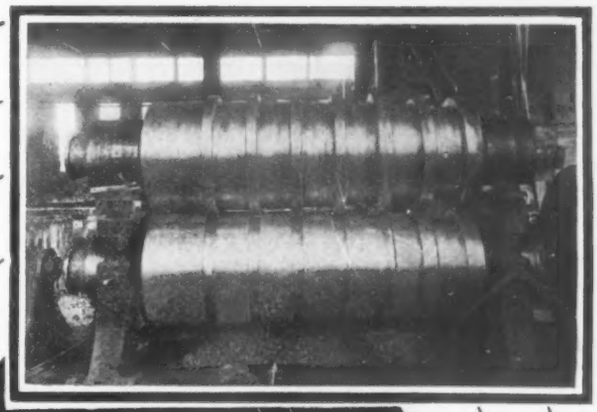
†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid east. tide., gross ton	19.50



For more than a decade we have hit the super-service mark in rolls and heavy duty castings

The Wear Resisting Alloy

ADAMITE

Adamite Rolls are first—by a big margin—in tonnage. They require one-half or less the diameter reduction per dressing necessary with the best alloy rolls.

Standardize your rolling practice by using "Adamite".

ADAMITE ROLLS AND HEAVY DUTY CASTINGS

Sole Manufacturers { Mackintosh - Hemphill Company / United Engineering & Foundry Co. } *Pittsburgh, Pa.*

Pig Iron

Sales Heaviest of Year at Chicago as Furnaces Reduce Price —Northern Markets Generally

PIG IRON PRICES, PAGE 76

Pittsburgh—Sales of pig iron are limited to carload lots for immediate use. Foundries are operating at about 50 per cent. Production of merchant iron is at about 30 per cent of capacity. July shipments by most sellers are below those of June. No tonnage inquiries are in sight. Prices are unchanged from $18, valley, for No. 2 foundry and basic, and $18.50 for malleable and bessemer.

Boston—Sales increased to 4000 tons in the past week, double the preceeding week's volume. Massachusetts and Connecticut foundries placed most of the orders. Inquiries are more active. No. 2 plain, No. 1X and No. 2X are offered at $16, Buffalo, and other makers supplying this district are meeting the price.

New York—Including the reported placing of 2000 tons of No. 2 foundry iron by the Thatcher Furnace Co., Garwood, N. J., pig iron sales here aggregate 7000 to 8000 tons, a larger total than a week ago. Inquiry aggregates 5000 tons. Prices are steady. Buffalo is $16, base, subject to occasional waving of silicon differentials. Southern iron is $18 to $18.50, delivered, New York docks.

Buffalo—Sellers report increasing interest in small lots. Shipments of iron by barge canal are threatened as the result of an intimation of fleet owners to ask higher rates after Aug. 1, by which time grain will be moving in greater volume. District furnace operations are unchanged.

Youngstown, O.—More pig iron has been sold here in the past fortnight than in any like period in the past six months. Some important buyers are asking for protection for last half. Prices are firm at $18, valley, for No. 2 foundry and basic, and $18.50 for bessemer and malleable. The Struthers Iron & Steel Co. has blown out its stacks for repairs, and the Carnegie Steel Co. has blown out one at its Ohio works for relining.

Cleveland—Little improvement is expected in the pig iron market until the automotive industry becomes more active. Current demand continues comprised of small lots for prompt delivery and the aggregate in the past week, 12,000 tons, booked by furnace interests whose main offices are in Cleveland, dropped slightly under the preceding week's total. Consumption and shipments are at a low ebb. Some consumers are inquiring for fairly large tonnages but are reluctant to close. About 5000 tons is pending. A southwestern Ohio melter is in the market for 1000 tons. An Alliance, O., foundry is understood to have closed recently for around 2000 tons of basic, but Cleveland furnaces evidently did not take the order. The market in Cleveland and immediate vicinity is dull, and the price continues nominal at $18, base, furnace. In going outside their immediate home territory lake furnaces here and elsewhere have been meeting competition more frequently at $17, base, furnace, though $17.50 to $18 still applies on some shipments, the latter figure pertaining to business in Michigan.

Chicago—Northern pig iron has been reduced 50 cents a ton to a range of $17.50 to $18, base, furnace, as a result of competition from boat iron. Prices have been under steady pressure from larger melters, with weakness more pronounced in the past ten days. Sales of all grades closed in the past week are reported the heaviest so far this year, due to three or four orders from important melters. Resumption of several foundries after vacations indicates better shipments next month and probably improved sales. Western Electric Co. and several others are operating after being down for two weeks. July shipments reached a low point for the year.

Cincinnati—A Hamilton, O., melter bought 500 tons of northern foundry iron during the past week. Other sales totaled less than 2000 tons. Inquiries are light. Quotations are unchanged.

St. Louis—A further reduction is noted in new orders for pig iron. A new low point for the year was reached in the volume of business during the past week. Inquiry also is unusually light. Shipments in July will be slightly better than in June. Melters are reluctant to close for future requirements as competition grows keener. New low prices are reported on southern iron, but northern iron is unchanged.

Birmingham, Ala.—Production of pig iron is at a slower rate than a month ago. Steel companies have good stocks of basic and are producing foundry iron. Few sales are being made for delivery outside the state. No. 2 foundry continues $14, furnace, for local delivery while lower prices prevail for distant shipment.

Philadelphia—Pig iron sales are restricted mainly to small lots. A Reading, Pa., melter purchased about 500 tons. Eastern Pennsylvania foundry iron now is $18.50 to $19, base, furnace.

Toronto, Ont.—Merchant pig iron sales drifted to 1000 tons in the past week, the smallest volume this year. Prices are steady.

Ferroalloys Moving at Slow Steelworks Rate

Ferroalloy Prices, Page 76

New York—Spot carloads of domestic spiegeleisen, 19 to 21 per cent, are going at the newly announced price of $33, furnace, subject to differentials on larger quantities. Sellers report spot business this month will be close to that of June. Ferromanganese is featureless at $99, duty paid, tidewater, on lots of carloads to 500 tons annually.

Specifications for special ferroalloys are expected to increase about the middle of August, in anticipation of a more active iron and steel market in September. Prices are firm. Chrome and tungsten ore markets are weak.

Pittsburgh—Shipments of all grades of ferroalloys are at a slow rate, with little improvement in prospect for several weeks. Consumers are taking material in only sufficient volume to support the current restricted rate of operations. Spiegeleisen buyers have had no occasion to increase their purchases of this material despite the recent reduction to $33 for 19 to 21 per cent material in the spot market. This price applies on small lots. Ferromanganese continues $103.79, delivered, for small lots. Ferrotungsten remains around $1.20 with demand dull.

Reed Prentice Resumes

Reed Prentice Corp., Worcester, Mass., has resumed with normal forces, both in machine shop and foundry after a two-weeks shutdown to enable all its men to take a simultaneous vacation. This practice has been established as an annual custom, doing away with intermittent vacations throughout the summer.

Scrap

Better Sentiment in Market—Dealers More Active in Some Districts—Prices Are Steadier

Chicago—Dealers are more active in the iron and steel scrap market, largely because of a desire to close short accounts as soon as possible. Higher prices again are being paid for railroad scrap. About 1000 tons of rerolling rails offered several days ago by a western road, brought slightly above $14, gross, delivered in the Chicago switching district. Much of the scrap offered last week by Chicago, Burlington & Quincy and the St. Paul railroads went to Peoria, St. Louis, Iowa markets and the Northwest, and therefore these higher prices were not wholly indicative of conditions in the Chicago market. Heavy melting steel remains nominally $12 to $12.25. Consumers apparently feel no alarm as to future prices, as the

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

HEAVY MELTING STEEL

Birmingham	10.50 to 12.00
Boston dealers	8.50 to 9.00
Buffalo, No. 1	13.00 to 13.50
Buffalo, No. 2	11.25 to 11.50
Chicago	12.00 to 12.25
Cinci., deal	11.00 to 11.50
Cleve., No. 1	12.00 to 12.25
Cleve., No. 2	11.25 to 11.50
Det., No. 1 deal	10.75 to 11.25
Det., No. 2 deal	9.50 to 10.00
E. Pa., del. mill	12.50 to 13.00
N. Y. dl. R. R.	9.00 to 10.50
N. Y. deal No. 2	7.00 to 7.50
N. Y., deal yd.	6.25 to 6.75
Pitts. No. 1	14.50 to 15.00
St. L., No. 1 sel.	11.25 to 11.75
Federal, Ill.	10.75 to 11.25
Granite C., Ill.	10.00 to 10.25
Valleys, No. 1	14.75 to 15.25

COMPRESSED SHEETS

Buffalo, dealers	11.25 to 11.50
Chicago	10.25 to 10.75
Cleveland	11.50
Detroit, dealers	10.50 to 11.00
E. Pa. new mat.	11.50
Pittsburgh	14.50 to 15.00
Valleys	13.75 to 14.25

BUNDLED SHEETS

Buffalo	9.00 to 9.50
Cinti, deal	10.25 to 10.75
Cleveland	9.00 to 9.25
Eastern Pa.	9.00 to 9.50
Pittsburgh	12.50 to 13.00
St. Louis	6.50 to 7.00

SHEET CLIPPINGS LOOSE

Chicago	7.50 to 8.00
Cincinnati	8.00 to 8.50
Detroit, dealers	8.00 to 8.50
St. Louis	6.50 to 7.00

STEEL RAILS SHORT

Birmingham	11.00 to 12.00
Boston, dealers	7.50 to 8.75
Buffalo	16.25 to 16.75
Chicago (3 ft.)	13.50 to 14.00
Chicago (2 ft.)	14.00 to 14.50
Cinti, deal	17.00 to 17.50
Detroit, deal	15.00 to 15.50
Pitts. (open-hearth, 3 ft. and less)	17.00 to 17.50
St. Louis	14.00 to 14.50

STOVE PLATE

Birmingham	10.00 to 11.00
Boston, con	8.50 to 9.00
Buffalo	10.50 to 11.00
Chicago, net	9.50 to 10.00
Cinci., deal, net	8.25 to 8.75
Det., net, deal	9.00 to 9.50
Eastern Pa.	10.00
N. Y., deal. mill	6.00 to 6.50
St. Louis	9.00 to 9.50

COUPLERS, SPRINGS

Buffalo	16.00 to 16.50
Chicago	13.50 to 14.00
Eastern Pa.	17.00 to 17.50
Pittsburgh	17.50 to 17.75
St. Louis	12.00 to 12.50

ANGLE BARS—STEEL

Chicago	13.00 to 13.50
St. Louis	10.50 to 10.75

LOW PHOSPHORUS

Buf., billets and bloom crops	17.50 to 18.00
Cleve. bil. and bloom crops.	17.50
Eastern Pa.	18.50 to 19.00
Pitts. billet and bloom crops	19.00 to 20.00
Pitts. sheet bar crops	18.00 to 18.50

FROGS, SWITCHES

Chicago	13.00 to 13.50
St. Louis	11.00 to 11.50

SHOVELING STEEL

Chicago	12.00 to 12.25
Cleveland	8.75 to 9.25
St. Louis	10.50 to 11.00

RAILROAD WROUGHT

Birmingham	10.00 to 10.50
Boston, dealers	7.50 to 8.00
Buffalo, No. 1	10.00 to 10.50
Buffalo, No. 2	13.50 to 14.00
Chicago No. 1	11.25 to 11.75
Chicago, No. 2	12.00 to 12.25
Cinti. No. 2	11.00 to 11.50
Eastern Pa.	15.00 to 15.50
N. Y., No. 1 dl.	10.50 to 11.00
Pitts. No. 2	14.50 to 15.00
St. Louis, No. 1	9.00 to 9.50
St. Louis, No. 2	11.00 to 11.50

SPECIFICATION PIPE

Boston	6.50 to 7.00
Eastern Pa.	11.50 to 12.00
N. Y., deal	7.25 to 7.50

BUSHELING

Buffalo, No. 1	11.25 to 12.75
Chicago, No. 1	9.50 to 10.00
Cinn., No. 1 dl.	9.25 to 9.75
Cinn., No. 2	6.25 to 6.75
Cleve., No. 2	8.25 to 8.50
Detroit, No. 1 new deal.	9.50 to 10.00
St. L. No. 1	9.00 to 9.50
Val. new No. 1	13.00 to 13.50

MACHINE TURNINGS

Birmingham	7.50 to 8.50
Boston, dealers	4.00 to 4.35
Buffalo	8.00 to 8.50
Chicago	6.25 to 6.75
Cinn., deal	7.50 to 8.00
Cleveland	7.00 to 8.00
Detroit	5.75 to 6.25
Eastern Pa.	9.00
N. Y., deal	5.00 to 5.50
Pittsburgh	8.50 to 9.00
St. Louis	6.75 to 7.25
Valleys	10.25 to 10.75

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, deal	3.50 to 4.00
Buffalo	9.00 to 9.50
Cinn., deal	8.00 to 8.50
Cleveland	8.75 to 9.25
Detroit, deal	6.50 to 7.00
Eastern Pa.	7.00 to 7.50
N. Y., deal	4.25 to 4.75
Pittsburgh	8.50 to 9.00

CAST IRON BORINGS

Birming. chem.	12.00 to 13.00
Birming. plain	7.50 to 8.50
Boston, chem.	9.00 to 9.25
Boston, deal.	4.00 to 4.35
Buffalo	9.00 to 9.50
Chicago	7.50 to 8.00
Cinn., deal.	8.00 to 8.50
Cleveland	8.75 to 9.25
Detroit, deal.	6.50 to 7.00
Eastern Pa.	8.50 to 9.00
E. Pa., chem.	13.50 to 14.00
N. Y., deal.	4.75
Pittsburgh	8.50 to 9.00
St. Louis	9.25 to 9.50

PIPE AND FLUES

Cinn., deal	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	9.25 to 9.75
Chicago, net	8.50 to 9.00
Cincinnati	9.00 to 9.50
Eastern Pa.	10.00
N. Y., deal	6.50 to 7.00
St. Louis	10.00 to 10.25

FORGE FLASHINGS

Boston, deal	7.25 to 7.60
Buffalo	11.00 to 11.50
Cleve. ov. 10 in.	10.00 to 10.50
Detroit	9.50 to 10.00

FORGE SCRAP

Boston, deal.	6.00 to 6.50
Chicago	14.50 to 15.00
Eastern Pa.	12.50

ARCH BARS, TRANSOMS

Chicago, net	13.00 to 13.50
St. Louis	14.00 to 14.50

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	11.50 to 12.00
Chi. steelworks	9.50 to 10.00
Cleveland	11.75 to 12.00
Eastern Pa.	10.00 to 11.00
Pittsburgh	12.50 to 13.00
St. Louis	9.25 to 9.75

STEEL CAR AXLES

Birmingham	19.00 to 20.00
Bos., ship. pt.	16.00 to 17.00
Buffalo	16.00 to 16.50
Chicago	16.80 to 17.35
Eastern Pa.	21.00 to 21.50
St. Louis	16.00 to 16.50

SHAFTING

Bost., ship pt.	13.00 to 15.00
Chicago	16.25 to 16.80
Eastern Pa.	18.00 to 18.25
N. Y., deal.	13.00 to 14.00
St. Louis	13.00 to 13.50

CAR WHEELS

Birming., iron	10.00 to 11.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.50 to 14.00
Buffalo, steel	16.00 to 16.50
Chicago, iron	13.50 to 14.00
Chi., roll steel	14.50 to 15.00
Cincinnati	12.00 to 12.50
N. Y., iron, dl.	10.00 to 10.50
Pitts., iron	15.00 to 15.50
Pitts., steel	17.50 to 17.75
St. Louis, iron	12.00 to 12.50
St. Louis, steel	13.75 to 14.25
E. Pa. steel	13.50 to 14.00
E. Pa. iron	14.50 to 15.00

NO. 1 CAST SCRAP

Birming., cup	12.00 to 13.00
Buffalo (mac.)	13.00 to 13.50
Boston, textile	11.50 to 12.00
Chicago, mach.	13.45 to 14.00
Chi., railroad	11.20 to 11.75
Chicago, agri.	10.90 to 11.50
Cinn., mach. cup., gross	17.75 to 18.25
Cleve, cupola	14.00 to 14.50
Det., net deal	10.00 to 10.50
E. Pa. cupola	13.50
N. Y. cup. deal.	9.50 to 9.75
N. Y., del. loc. foundries	14.00
Pitts. cupola	14.00 to 14.50
San Fran., del.	13.50 to 14.00
Seattle	14.00 to 14.25
St. L. No. 1 ma.	11.50 to 12.00
St. L. No. 1	10.50 to 11.00

HEAVY CAST

Boston	10.50 to 11.00
Bos. Mach. cast	13.50 to 14.00
Buffalo, break.	8.50 to 9.00
Cleve., break.	9.00 to 9.50
Detroit, auto, net deal.	11.50 to 12.00
Det., break., dl.	7.00 to 7.50
Eastern Pa.	11.50 to 12.00
N. Y. No. 1 dl.	8.00 to 8.50
N. Y. break. dl.	7.25 to 8.60
Pittsburgh	11.50 to 12.00

MALLEABLE

Boston, R. R.	15.00 to 15.50
Buffalo	15.00 to 15.50
Chicago, agri.	11.75 to 12.25
Chicago, R. R.	13.50 to 14.00
Cinn., R. R. dl.	15.25 to 15.75
Cinn., agri., dl.	14.25 to 14.75
Cleve., rail	16.00 to 16.50
Det. auto deal.	13.50 to 14.00
St. Louis, rail.	10.00 to 10.50

RAILS FOR ROLLING
5 feet and over

Birming. cup	12.00 to 12.50
Boston	9.00 to 9.50
Buffalo	13.50 to 14.00
Chicago	14.50 to 15.00
Eastern Pa	13.00 to 13.50
New York	9.50 to 10.00
St. Louis	12.00 to 12.50

LOCOMOTIVE TIRES

Chicago, cut	15.00 to 15.50
St. L. No. 1	13.00 to 13.50

LOW PHOS. PUNCHINGS

Chicago	13.00 to 13.50
Pittsburgh	17.50 to 18.00
Eastern Pa.	17.00 to 18.00
Buffalo	17.00 to 17.50

OUT of the SHADOW of DOUBTFUL PERFORMANCE

Spalling—frequent breaking of rolls at the neck—excessive chipping where designs call for sharp edges all cast a shadow that hinders production. Invariably such conditions have to be met and solved right on the ground.

That is the "why" for Duquesne service and what is back of the standing invitation to "Send For The Duquesne Roll Engineer".

The Duquesne Roll Engineer is accustomed to solving Roll Problems right on the job. Following is the background of training and experience of the 6 experts comprising this staff.

Engineer No. 1—Graduate of the Academy of Mines. Freiberg Saxony Germany. Class of 1894. 27 years practical experience.

Engineer No. 2—Grew up in the foundry business. Specializing in Rolls. 31 years practical experience.

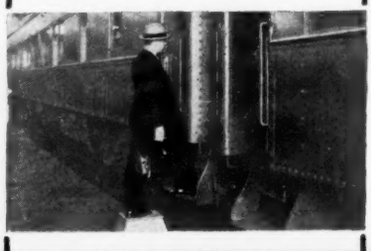
Engineer No. 3—Graduate Carnegie Tech. Class of 1921. 8 years practical experience.

Engineer No. 4—Graduate George Washington University. Class of 1908. 18 years practical experience.

Engineer No. 5—Graduate Yale, 1908. Post graduate of Massachusetts Institute of Technology. 19 years practical experience.

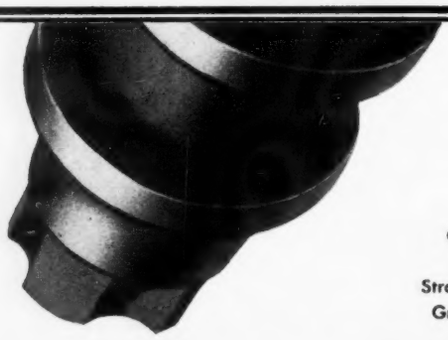
Engineer No. 6—Graduate of Lawrence Scientific School, Harvard University, 1903 25 years practical experience.

SEND FOR THE DUQUESNE ROLL ENGINEER



DUQUESNE

Duquesne Steel Foundry Company . . . Pittsburgh



Makers of Chrome Molybdenum, Duquesne Special, Straight Carbon Steel Rolls; Grain and Iron Alloy Rolls

larger plants have been laying down important reserves. Restricted shipments in all grades, gaged by the limited production of steelworks and casting shops, are in effect.

Boston—A better sentiment is developing in the scrap market, with firmer prices on heavy melting steel. A steamer is expected to load a cargo soon for shipment to Japan. More than a score of Eagle boats are being dismantled here.

New York—Scrap dealers' prices have steadied, and with supplies small, a substantial buying movement might force the market upward sharply. Only in the cast grades is there any weakness, as these grades are plentiful. Improved buying is noted in specialties, which have been in moderately good demand for some time, with prices strong compared with those for the ordinary grades.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$15.00
Steel axles	13.00
Car wheels	11.00
Stove plate	10.00
Wrought pipe	5.00
Turnings	6.00
Heavy melting steel	8.00

TORONTO

Steel axles	10.00
Iron axles	12.00
Heavy melting steel	9.00
Turnings	6.50
No. 1 mach. cast (net)	11.00
Malleable (net)	9.00

Buffalo—A district steelworks has purchased a good grade of No. 1 heavy melting steel at $13.25, delivered, about 25 cents under its last contract. Deliveries will start at once. Otherwise the scrap market is unusually quiet.

Cleveland—Iron and steel scrap continues weak and inactive. Prospects that steelworks will enter the market in the near future are slight. One of the two larger works will close Aug. 4 for an indefinite period. Middle interests are booking material for shipment to the valley. Dealers are taking in some scrap for stock a advantageous prices. Foundry grades are dull. Quotations are unchanged.

Detroit—Blast furnace grades of scrap are weaker, there being practically no demand. Automotive production of scrap in August will be materially larger than in July. Expectations are that steelworks consumption of scrap also will be higher next month. Water shipments of scrap out of this district are lighter.

Philadelphia—Trading is restricted to small and moderate tonnages. Prices are unchanged excepting specification pipe which has been sold at $12, delivered, or 50 cents above the recent minimum.

Pittsburgh—Open-hearth operations are low, limiting demand for steelmaking scrap, and shipments are being held back on contracts. An indication of activity by some steel foundries is noted in inquiries for steel wheels and springs which are a shade stronger. Considerable scrap is available but is absorbed quickly. Some accumulating is being done at low prices.

St. Louis—Scrap sales have not increased but the market has a better undertone. The spread between heavy melting steel and pig iron normally is $3 to $4, while now it is $5 to $6. Many other items have decreased sharply in recent months; steel car wheels which were in demand eight months ago at $20 now can be had at $13.50 to $14. Less scrap is coming into the market, and these conditions are expected to improve the price situation soon. A few fractional declines were noted in the past week. Railroads offerings were small.

Cincinnati—The scrap market continues dull, but middle interests are becoming more wary of selling short. The Norfolk & Western railroad list offers 2800 tons of steel.

Birmingham, Ala.—Demand for scrap is quiet and quotations are weak. Heavy melting steel is offered at a maximum of $12.

Toronto, Ont.—The scrap market is quiet. Dealers are buying in small quantities for direct shipment to consumers. Prices are unchanged.

Coke

Market Slow—Beehive Fuel Prices Easier in East—Foundry Quotations Being Reaffirmed

COKE PRICES, PAGE 76

Pittsburgh—Coke demand is at a low point, with most sales of the furnace grade at $2.50. Foundries are buying intermittently and prices of foundry grades are unchanged.

Production of coke in the Connellsville region for the week ended July 19 was 22,150 tons, compared with 24,580 tons the preceding week and 101,640 tons in the same period a year ago, according to the *Connellsville Courier*.

Boston—New orders for foundry coke show little improvement, but dealers' demands for domestic grades are up. Prices are unchanged.

New York—Coke continues to move slowly, with beehive furnace weak at $2.50 to $2.60, Connellsville, and the standard brands of beehive foundry at $3.50 to $3.75, Connellsville. Premium brands of beehive foundry coke continue $4.85, Latrobe, Pa. By-product foundry coke is $9 to $9.40, delivered Newark, N. J.; $11, New England; and $9, Philadelphia.

Cincinnati—Effective Aug. 1, by-product foundry coke here will be offered at $9.05, delivered Cincinnati, a reduction of $1. The market for foundry grades is dull.

St. Louis—Intensive sales efforts by by-product coke makers have met with satisfactory results, consumers contracting for fall and winter requirements. Excessive heat is retarding coke consumption at foundries.

Chicago—By-product foundry coke shipments dropped sharply in July. The price is unchanged at $8, ovens, and $8.75 for local delivery.

Birmingham, Ala.—Foundries and machine shops are buying coke for early requirements. Independent producers have little stock and are holding down production.

Would Restrict Riveting to Business Hours

New York—Riveting and bolting restrictions, limiting such operations to 8 a.m. to 5 p.m., in residential districts, is recommended by the Noise Abatement commission of New York. The commission also urges that contractors be prohibited operation of internal combustion, steam or compressed air engines without adequate muffler or silencer attachments.

Considerable space is devoted in the report to the adoption of welding in construction work. The report concurs with one recommended by the Merchants' Association committee by which permission would be granted in the building code for welding construction in structures of medium heights where wind stresses are not involved.

Pacific Coast

Optimism on Horizon Though Unfavorable Conditions Often Rule—Large Plate Job Expected—Few Awards and Inquiries at San Francisco—Pig Iron Prices Are Cut

Seattle—Despite unfavorable conditions in some branches of the iron and steel trade, the undercurrent in the Pacific northwest is optimistic. Several new projects of importance are developing and a decided improvement is believed certain within 60 days. The lumber industry continues in a bad way and this affects the steel industry in no small degree. On the other hand, construction and public works projects are fairly active. Government appropriations of $8,000,000 are available for construction in Seattle and vicinity. The Northern Pacific railway announces that the South Tacoma shops and other repair plants along the line will return to a six-day week basis.

Public works awards in the Northwest last week totaled $1,537,769, compared with $2,900,319 the week before. Permanent construction work has begun on the Puget Sound Power & Light Co. hydroelectric project at Rock Island, in the Columbia river, on which $6,000,000 will be spent this year. Montana has awarded 14 road contracts involving 121 miles of new highway and 29 small bridges, on bids totaling $650,000.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Pig Iron and Coke

The market is quiet in pig iron and coke, some foundries having considerable work, others being idle. Both iron and steel foundries are affected by the depression in the lumber industry. Buying of pig iron and coke is below normal. Iron prices are softer for the last half 1930, No. 1 Columbia being quoted at $24.50, an average reduction of $1 and places it on a rate parity with Burn. Some small shipments of the latter are enroute but Columbia is supplying most of demand here. English coke is favored as 30-day deliveries can be given and the steamship companies are landing it in better condition. British coke is quoted at $14 under contract and $14.25 in small lots.

Bars, Plates and Shapes

Mill prices are unchanged, merchant bars and shapes at 2.25c, reinforcing material at 2.30c and plates firm at 2.15c. No important tonnages of concrete bars were booked this week, and while specifications for large projects are lacking, there is considerable business being done in car lots. Northwest Steel Rolling Mills has taken 63 tons involved in an apartment at Walla Walla, Wash.

One of the largest plate jobs of the year, estimated at 10,000 tons, will be up for figures within a few weeks. This is the main supply water line for West Seattle. Engineers are completing plans for 26,000 feet of 48-inch pipe. Date for receiving tenders is not yet announced. Jobbing houses report a fair volume of business in 3/16 and ¼-inch gage plates for oil and storage tanks.

Rails and Pipe

Six thousand tons of 30-foot steel rails and angles, shipped from the plants of the Colorado Fuel & Iron Co., will be loaded at Puget Sound ports and San Francisco for shipment to Valparaiso, Chile, on vessels of W. R. Grace & Co's fleet. This is the first large shipment of this nature to be routed via Pacific terminals. Seattle will receive bids Aug. 1 for furnishing 500 tons of 60 and 80-pound steel rails for the municipal street railway.

Vancouver, B. C., has awarded to Evans, Coleman & Evans the contract for furnishing about 500 tons of cast iron pipe, 30,000 feet of 6-inch Canadian manufacturing centrifugal being specified. American Cast Iron Pipe Co., through its Seattle office, has booked 100 tons of monocast involved in several small jobs.

Shapes Head Slow List

San Francisco—(*By Air Mail*)—Movement of iron and steel products has shown little improvement during the past few weeks, and few awards or inquiries were reported. The structural steel shape market was the most active, several fair sized lots being placed. Outstanding among these were 600 tons and 550 tons for two theatres on South Broadway, Los Angeles, booked by the Minnesota Steel & Machinery Co. and the Consolidated Steel Corp., respectively.

Pig iron and coke demand continues relatively quiet, most sales and inquiries calling for small lots. Prices have been reduced in certain sections in the west both on Utah and Indian iron. This is especially true in the Los Angeles district. Utah basic and foundry iron now ranges from $22 to $24 ton delivered, while Indian iron, 2.25 to 2.75 silicon, is being quoted at the same figure, c.i.f., duty paid.

Bars, Plates and Shapes

Awards of concrete bars were the smallest in over six weeks, totaling less than 500 tons. Most of this tonnage was composed of lots ranging from 20 to 60 tons. An unnamed interest took 100 tons for a bridge over the Trinity river. An award of 2500 tons for the Ford plant in Richmond, Calif., is expected to be made within the next few days. New inquiries include 277 tons for a bridge over the San Gabriel river and 300 tons for a theatre in Los Angeles. Out-of-stock prices here continue firm at 2.50c, base, on carload lots.

Few plate inquiries of importance are up for figures. Awards this week aggregated less than 500 tons. The American Potash & Chemical Co., Trona, Calif., placed four steel tanks, involving 375 tons, with the Western Pipe & Steel Co., and the Consolidated Steel Corp., Los Angeles, has opened bids on approximately 2000 tons for a 36 and 42-inch welded steel pipeline. No change in prices is noted, 2.15c to 2.25c, c.i.f., being the range.

In addition to the two theatre projects, mentioned above, shape awards included 300 tons for a Kress store in Honolulu. McClintic-Marshall Co. took 200 tons for a store in San Rafael, Calif. It is reported that the Herrick Iron Works is low bidder on 4400 tons for the Ford plant, Richmond, Calif. Bids are being taken on 450 tons for an addition to the Bank of Italy, San Francisco. Plain material continues firm at 2.25c, c.i.f.

Other Finished Material

Movement of cast iron pipe continues to feel the lull of the usual summer months. Awards all involved lots of less than 100 tons. American Cast Iron Pipe Co. was low bidder on 771 tons for San Francisco. The only new inquiries involved 301 tons for San Diego and 226 tons for Whittier, Calif., bids on which will be opened Aug. 11, and Aug. 4, respectively.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2 points less. Wrought iron pipe, Pittsburgh base.

BUTT WELD

Steel In.	Blk.	Gal.	Iron In.	Blk.	Gal
½	58	44½	½	23	5
¾	62	50½	¾	28	11
1—3	64	52½	1 and 1¼	31	15
			1½ and 2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7 and 8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7 and 8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¼—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

SEAMLESS TUBING

Cold drawn; f.o.b. mill

Random lengths over 5 ft.....55%
Selected lengths, 1 to 18 ft.....53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir.	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six to 24-inch, Chicago	45.20 to 46.20
Six-inch and over, N. Y.	38.50 to 40.50
Four-inch, New York	41.50 to 42.50
Stand. fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.25c
Chicago	2.90c
Cincinnati	3.15c
Cleveland	2.85c
Detroit	3.00c
Houston	3.00c
Los. Ang.	3.40c
New York††	3.10c
Philadelphia	2.70c
Pittsburgh	2.75c
Portland	3.15c
San Frans.	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.15c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.15c
Detroit	3.00c
New York††	3.10c
Philadelphia	2.70c
St. Louis	3.15c
Tulsa	3.65c

REINFOR. BARS

Baltimore	2.50c-3.31c
Boston	2.665c
Buffalo	2.95c
Chattanooga	3.25c
Cincinnati	3.15c
Cleveland	2.25c-2.44c
Detroit	2.30c-3.00c
Houston	3.00c
Los Ang. cl	2.40c
Los Ang. lcl	2.70c
New York	2.65c-3.10c
Philadelphia	2.55c
Pittsburgh	2.75c
San Fran. cl	2.30c
San Fran. lcl.	2.60c
Seattle	3.15c
St. Louis	3.15c
Tulsa	3.65c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.35c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	3.40c
New York	3.10c
Philadelphia	2.60c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York	3.30c
Philadelphia	2.60c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.75c

NO. 10 BLUE

Baltimore	3.50c
Bost. 3/16-in.	3.915c
Buffalo	3.50c
Chattanooga	3.75c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.10c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
New York	3.40c
Portland	4.00c
Phila. *†	3.15c
Pitts.**	3.10c
San Fran.	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.545c
Tulsa	3.95c

NO. 24 BLACK

Balt. *†	3.75c
Boston	4.70c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Clev. ***	3.75c
Detroit	3.95c
Los Ang.	4.70c
New York	3.55c to 3.65c
Phila. *†	3.70c
Pitts. **	3.65c
Portland	5.00c
San Fran.	4.35c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.79c
Tulsa	4.45c

NO. 24 GAL. SHEETS

Balt. *†	4.50c
Boston	5.45c
Buffalo	4.40c to 4.60c
Chicago (lc. del.)	4.60c
Chicago (outside shipment)	4.35c to 4.60c
Cincinnati	4.90c
Cleveland***	4.35c
Detroit	4.60c
Houston	5.40c
Los Ang.	5.10c
New York	4.25c
Phila. *†	4.25c
Pitts.**	4.20c
Portland	5.50c
San Fran.	5.00c
Seattle	5.50c
St. Louis	4.85c
St. Paul	4.58c
Tulsa	5.35c

BANDS

Baltimore	3.50c
Boston	4.015c-5.00c
Buffalo	3.50c
Chattanooga	3.45c
Chicago	3.10c
Cincinnati	3.35c
Cleveland	3.10c
Det. 3/16-in. & lighter	3.30c
Houston	3.65c
Los Ang.	4.30c
New York	3.40c
Philadelphia	3.00c
Pittsburgh	3.10c
Portland	3.50c
San Fran.	3.75c
Seattle	4.15c
St. Paul	3.35c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston	5.50c-6.00c
Buffalo	3.90c
Chicago	3.65c
Cincinnati	3.90c
Cleveland	3.65c
Det. No. 14 & lighter	3.80c
New York	3.75c
Philadelphia	3.25c
Pittsburgh	4.10c
Seattle	5.15c
St. Paul	3.90c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.85c
Chicago	3.35c
Cincinnati	3.80c
Cleveland	3.40c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.50c
Philadelphia*	3.40c
Pittsburgh	3.35c
Portland (a)	4.50c
San. Fran.(a)	4.25c
Seattle (a)	4.75c
St. Paul (a)	3.85c
St. Louis	3.60c
Tulsa	4.75c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100-in 500 lbs. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	6.15c
Cincinnati	6.10c
Clev. (b)	5.95c
Detroit	5.40c
New York	5.05c
Phila. (c)	4.95c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.

††Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

APOLLO STEEL COMPANY

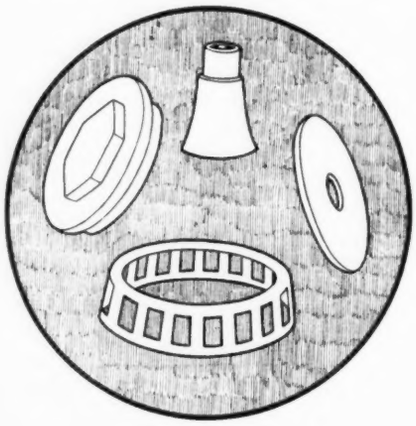
Full-Finished Sheets

For Automobile Bodies, Metal Furniture, or Stampings — deep drawing and extra deep drawing qualities.

APOLLO STEEL COMPANY'S long experience, in the manufacture of various kinds of sheets, is supplemented by the finest and most up-to-date heat treating equipment for quality and uniformity in full-finished sheet production.

Ask APOLLO STEEL COMPANY Engineers to help you select sheets that will best meet your requirements.

"SAVE WITH STEEL"



General Offices: APOLLO PA.

Pittsburgh Office: Oliver Bldg.

Branch Offices:

BOSTON	Park Square Bldg.	LYNCHBURG	612 Krise Bldg.
BUFFALO	Marine Trust Bldg.	NEW ORLEANS	437 Decatur St.
CHICAGO	180 N. Michigan Ave.	NEW YORK	1372 Hudson Term. Bldg.
CLEVELAND	1655 Union Trust Bldg.	PHILADELPH'A	607 Otis Bldg.
CINCINNATI	1002 American Bldg.	SAN FRANCISCO	Monadnock Bldg.
DETROIT	2034 Dime Bank Bldg.	ST. LOUIS	2817 Laclede Ave.
INDIANAPOLIS	508 Illinois Bldg.	SYRACUSE	Hills Bldg.
LOS ANGELES	Orpheum Bldg.	SEATTLE	L. C. Smith Bldg.

Mill Products

Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices based on 11.50c, del., Conn. for copper

Sheets	
Yellow brass (high)	17.87½
Copper, hot rolled	20.75
Lead, full sheets (cut ½c more)	9.00
Zinc sheet (100-lb. base)	9.50
Tubes and Pipes	
Seamless yellow brass (high)	22.75
Seamless copper	23.00
Rods	
Yellow brass (high, full turnings)	16.12½
Naval brass	19.00
Anodes	
Copper, untrimmed	18.25
Wire	
Yellow brass (high)	18.37½

Old Metals

Dealers' buying prices, cents lb.

Heavy Red Brass	
New York	7.25 to 7.50
Chicago	6.75 to 7.00
Cleveland	7.50 to 8.00
St. Louis	7.00 to 7.50
Heavy Yellow Brass	
Cleveland	4.50 to 5.00
Heavy Copper and Wire	
New York	8.50 to 8.75
Boston	8.50 to 8.75
Chicago	8.75 to 9.00
Cleveland	8.00 to 8.50
St. Louis	7.50 to 8.00
Red Brass Borings	
New York	6.75 to 7.25
Yellow Brass Tubing	
Cleveland	4.50 to 5.00
Light Copper	
New York	7.00 to 7.50
Chicago	6.75 to 7.00
Cleveland	7.00 to 7.50
St. Louis	7.00 to 7.50
Light Brass	
Boston	4.00 to 4.25
Chicago	3.50 to 3.75
Cleveland	3.50 to 4.00
St. Louis	4.00 to 4.50
Zinc	
New York	2.00 to 2.25
Cleveland	1.25 to 1.50
St. Louis	2.00
Aluminum	
Clippings, soft, Cleveland	11.00 to 12.00
Clippings, hard, Cleveland	8.50 to 9.00
Borings, Cleveland	5.00 to 5.50
Cast, Cleveland	7.00 to 7.50
Cast, Boston	7.50 to 8.00
Cast, St. Louis	7.50

Secondary Metals

Remelt aluminum No. 12	15.00
Brass ingot, 85-5-5-5	11.00

Metals

Stronger Tone Develops, Zinc Leading Upward Tendency—Pickup in Buying Develops

New York—The nonferrous metals are in a stronger and more active market. Zinc has become the market leader, with a jump from a little above 4.00c, East St. Louis, early in the month to 4.75c and predictions of still further recovery in the early future are being made.

Copper export business continues heavy while domestic is quiet after recent good bookings. Lead is moderately active and in a sound position, while tin, though not particularly active, shows a tendency to rise.

Brass mill business is improved. Prices of brass and copper products during the past week held unchanged on the basis of 11.00c for copper.

Copper—Producers are not selling freely at 11.00c and yet they seem to have a definite policy of not advancing the price in the open market for the time being. Probably the policy of some powerful producers to keep production down until supply and demand are in stronger balance, is an important factor. Producers are taking care of the normal needs of regular customers, and while some sellers are accepting the numerous small lot orders that have come into the market, others are not. The scrap market is unusually strong with supplies limited.

Zinc—Prime western has been going up about 10 points a day on moderate sales. This rapid rise reflects the stronger Joplin ore situation. Sentiment is helped by the formation of the new European cartel and the low stocks held by consumers. The ore market is up again, this time $3, to $33 a ton. High grade metal continues 1 cent over prime western.

Tin—Users are buying moderately but the price has been firming up because curtailment seems to be making some progress. Users continue to follow the policy of doing most of their buying on the weak points. Statistics still are weak but July may not be quite so bad as had been expected.

Lead—Buying has been moderately active and prices firm.—*Daily Metal Trade.*

Coke By-Products Easier; Phenol More Active

New York—Demand for phenol is slightly more active. Bulk of business on best grades is moving at 16c and 17c has practically disappeared. Crude phenol is moving in fair lots at 12c in tanks. Curtailed coking operations have prevented heavy accumulation of distillates, although buying is light. Shading prevails. Current output of benzol is moving actively into the motor fuel field, prices following the gasoline markets. Best grades for chemical uses are nominally 21c in tanks. Toluol, solvent naphtha and xylol are inactive.

Spot demand for naphthalene is fair, although the most active shipping season is over. Prices are unchanged. Shading continues in sulphate of ammonia and demand is off.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.21
90 per cent benzol	0.21
Toluol	0.30
Solvent naphtha	0.25
Commercial xylol	0.25
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.15 to 0.16
Per Pound at Producers' Plants	
Naphthalene flakes	0.04½ to 0.05½
Naphthalene balls	0.05½ to 0.06½
Per 100 Pounds Delivered	
Sulphate of ammonia	$2.00 to $2.10

Leader Heater & Boiler Co., Chicago, has leased a part of the 12th floor of the Midland building, 176 West Adams street, Chicago.

Prices of the Week, Cents a Pound

	Copper delivered Electro	Copper livered Lake de-	Copper refinery Casting	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
July 23	11.00	11.07½	10.87½	29.62½	30.05	5.25	5.15	4.40	22.90	7.00	35.00
July 24	11.00	11.07½	10.87½	29.75	30.10	5.25	5.15	4.50	22.90	7.00	35.00
July 25	11.00	11.07½	10.87½	29.87½	30.25	5.25	5.15	4.62½	22.90	7.12½	35.00
July 26	11.00	11.07½	10.87½	.....	.....	5.25	5.15	4.65	22.90	7.12½	35.00
July 28	11.00	11.07½	10.87½	30.12½	30.50	5.25	5.15	4.75	22.90	7.12½	35.00
July 29	11.00	11.07½	10.87½	29.87½	30.25	5.25	5.15	4.75	22.90	7.12½	35.00

Europe

French Steel Output in Record Though General Picture Is Depressing and Prices Easy

Birmingham, Eng.—The second half has opened disappointingly for the British steel trade. Published returns of imports and exports for the first six months are substantially lower than those of 1929 or 1928. Taking steel generally, exports fell to about £400,000, largely owing to restricted buying from Australia, Canada and India. Belgium, France and Italy have also very much reduced their purchases of British pig iron.

Dorman Long & Co. Ltd. have closed down their Clarence Iron & Steel Works on Teesside, and the colliery associated with it will be closed down at the end of the month. With the exception of some few stoppages through small trade disputes the Clarence ironworks have been in continuous operation since 1854.

It is understood that about 200,000 men will be added to the list of unemployed whose numbers have been swelling rapidly on Teesside owing to the shutdown at various establishments. Two furnaces on hematite at the Ayrsome ironworks of Gjer Mills & Co. also have been stopped. At both works the cause of the stoppage is bad trade, but in regard to the curtailment of hematite production Gjer Mills & Co. say that unprofitable prices prevent their carrying on.

Middlesbrough Lacks Backlog

In the Middlesbrough district the shortage of orders for steel is causing serious alarm. Many works now are nearing the end of their orders and will have to curtail output unless fresh contracts come to hand. In South Wales there has been a further shutdown of steel works and the increase of continental competition is given as the direct cause for the stoppages.

In the Birmingham district there is no improvement in demand for steel. Structural work is difficult to secure. A few contracts are pending but they are of small bulk and the subject of keen competition amongst the many engineers who have recently taken up this class of work. Weakness is developing in the semifinished steel market, billets being obtainable below £6 ($29.16) whenever an attractive order is offered. Continental steel prices are weak as the result of the decontrol on the continent.

The Midland pig iron market is lifeless. The drop of 2s 6d ($.60) in Northampton and Derbyshire irons has not been sufficient to bring any real revival. Stocks are increasing at the furnaces but there are so few operating in the Midlands that there is not likely to be any closing down. As the August holiday approaches, interest in the weekly market at Birmingham is declining. The Central Pig Iron Producers association announces a further reduction of 2s 6d ($.60).

The Middlesbrough iron trade continues flat. New orders are scarce and makers' stocks are heavy. Shipments for the month are about 2000 tons better than for the corresponding period of June and is due to the despatch of iron under contracts. No. 3 Middlebrough is unaltered in price at £3 7s 6d ($16.39). East coast hematite is steady owing to the fact that there is less iron for disposal now that a number of furnaces have ceased operations. Business with Scotland is likely to fall off in the next two weeks owing to the annual holidays.

Tin Makers Feel Export Drop

In the Staffordshire wrought iron trade manufacturers have received the pig iron reduction with satisfaction, but it is not sufficient to make any difference to the selling price. Even the marked bar mills, which have had a steady run for many months, are beginning to feel the pinch.

Galvanized sheet makers are suffering severely from the lack of export business, especially with India and South Africa. The monthly returns of exports tell a dismal tale. British exports for June setting up a new low record for any month in the last nine years. The returns for the first half of the year are down by 138,130 tons as compared with 1929.

In the Welsh tin plate trade, prices have been stabilized on the basis of 18s ($4.38) although tin still is falling. Enquiries from Japan have been plentiful this week although no important business has been arranged. The Continent and other parts of the Far East are stagnant. British can makers are keeping off the market. Shipments of tinplates from Swansea last week showed a drop of 39,846 boxes. Welsh steel bar prices are maintained at £6 10s ($31.59) with a discount of 5s ($1.21) a ton, but makers are willing to shade this figure owing to the severe Continental competition.

European Prices Easier; Business Still Slack

London—(*By Cable*)—British iron and steel manufacturers can see no revival in business before fall. Works in Scotland are practically at a standstill for a fortnight due to a holiday period. Only 27 of 80 open-hearth furnaces in the Sheffield districts are operating. Continental billets and beams are offered in Birmingham below the comptoir prices. Continental bars are offered at £5 10s ($26.73), delivered, but consumers not buying. A further reduction of 2s 6d (61 cents) per ton is expected in Midland pig iron prices. Tin plate is quiet, but the price is firm. The market for galvanized sheets is stagnant.

A report from Brussels states business in Belgium is scarce. The price of steel bars has declined to £4 ($21.87) and is now below the quotation on billets. The general price situation is confused. Markets in France and Germany are dull. International comptoirs for semifinished steel and beams are expected to function beginning Aug. 1.

Belgian Steelmaker Earns Profit in Poor Year

Brussels — The report of Usines Metallurgiques du Hainaut for the financial year 1929 states that, commercially, the year started well, but since June the volume of business declined, and keen competition caused prices to fall off. At the same time iron ore has been increased 10 per cent as from Jan. 1, 1929; 8.05 per cent on wages and 10 per cent on transport freights as from March 1, while the cost of fuel has increased from 10 to 30 per cent. Notwithstanding these handicaps, the financial results for the year 1929 were better than in the preceding year, and a profit of 32,253,748 francs was made ($900,000). It is interesting to note that in the balance sheet for the year there is a charge of 2,624,000 francs ($73,000) for penalties in-

Cleveland-Cliffs

IRON ORE · PIG IRON · COAL · COKE

Into the top of a monstrous dark caldron, ton after ton of cold, lifeless materials—red iron ore, gray coke and limestone—is charged. Inside, a seething, hot molten mass bubbles while dwarf-like men watch and control at their posts. Hour after hour, month after month, lasts the transforming process. Ready to tap . . . workers dart here and there . . . then, a white glare . . . splashing and sparkling, a river of metal flows from the furnace. The Pig Iron is made! Cleveland-Cliffs Pig Iron is made from the best grade Lake Superior ores—Standard Basic Iron and all grades of Foundry and Malleable are furnished.

THE CLEVELAND-CLIFFS IRON CO · CLEVELAND · OHIO

curred with respect to the continental steel entente on account of overproduction.

The report states that the highest outputs since the reorganization of the works were realized during the first nine months of 1929, and, notwithstanding the diminution of output during the last three months of the year, the output of pig iron for the whole year was 9.3 per cent in excess of that of 1928, which itself was 10.9 per cent over that of 1927.

British Production Drops To Level of 1926

London—Production of pig iron in Great Britain in June was the lowest since February, 1929.

June output of steel ingots and castings was the lowest since Dec., 1926. Comparative figures follow,

(Gross tons)

Mon. ave.	Act. Fur. on last day	Pig iron	Steel ingots and castings
1913	338(*)	855,000	638,600
1927	149	607,700	758,100
1928	132	550,900	710,400
1929	162	631,600	804,560
1930			
Jan.	159	560,000	771,100
Feb.	162	607,000	776,400
March	157	665,800	826,100
April	151	619,600	696,100
May	141	614,500	692,800
June	133	563,200	600,100

(*) Average for year.

German Steel Output Lowest for Four Years

Berlin—Production of pig iron in Germany in May showed a decline from April. Output of steel ingots and castings in Germany in May was 1,034,088 metric tons, as compared with 1,033,383 tons in April. Output of rolled steel in May was 735,741 metric tons, against 737,355 tons in April. With the exception of November and December, 1928, when the Ruhr strike prevailed, the May output of pig iron in Germany was the lowest recorded since August, 1926, while the output of steel ingots and castings was the lowest since July, 1926. Comparisons follow, in metric tons:

Mon. ave.	Pig iron	Steel ingots and castings	Finished steel
1913*	909,640	993,640	970,240
1927	1,091,875	1,359,225	1,069,930
1928	984,700	1,209,770	880,690
1929	1,116,730	1,353,820	940,425
1930			
Jan.	1,092,206	1,275,023	896,076
Feb.	964,517	1,176,435	797,899
March	1,007,576	1,201,206	834,349
April	901,358	1,033,383	737,355
May	859,657	1,034,088	735,741

*Present boundaries.

Belgian Iron and Steel Output at 1927 Level

Brussels—The output of pig iron in Belgium in May was below that of April.

Output of steel ingots, castings and finished steel in May was much below that of April. It is of interest to note that the May output of pig iron was the lowest since February, 1927, and the May output of steel ingots and castings was the lowest since September, 1927, which shows the importance of the crisis which now is experienced in the Belgian iron and steel trades, due principally to the dullness of export business. Comparisons follow:

Mon. ave.	Act. Furn.	Pig iron	Steel ingots and castings	Finished steel
1913	....	207,055	205,550	154,920
1927	....	312,620	309,040	255,185
1928	....	325,445	327,870	281,125
1929	58	341,330	344,370	296,370
1930				
Jan.	58	343,380	340,200	296,220
Feb.	57	315,320	321,480	271,430
Mar.	57	341,820	359,150	258,770
April	56	313,250	312,550	252,150
May	54	299,510	294,160	240,900

French Steel in Record; Pig Iron Close to Mark

Paris—Output of pig iron in France in May was 899,000 metric tons, as against 854,000 tons in April, and 904,000 tons, the highest mark, reached, in January, 1929.

The output of steel ingots and castings in France in May amounted to 853,000 metric tons, the record monthly figure, the previous high mark having been attained in October, 1929, with 847,000 tons. Comparisons follow, in metric tons:

Mon. ave.	Act. Fur. on last day	Pig iron	Steel ingots and castings
1913	131	433,940	390,580
1927	142	774,785	689,610
1928	153	841,415	782,995
1929	156	870,000	805,500
1930			
Jan.	156	875,000	800,000
Feb.	154	815,000	772,000
March	152	898,000	848,000
April	153	854,000	787,000
May	154	899,000	853,000

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, July 28	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable		£ s d		£ s d		£ s d		£ s d
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$16.44	3 7 6*	$15.83	3 5 0	$15.83	3 5 0	$15.83	3 5 0
Basic-bessemer	15.95	3 5 6†	14.61	3 0 0	14.61	3 0 0	14.61	3 0 0
Hematite, Phosphorus 0.02-0.05	17.29	3 11 0	24.82	630*	.....	.....	17.78	3 13 0
SEMIFINISHED STEEL								
Billets	$28.85	5 18 6	$22.89	4 14 0	$22.89	4 14 0	$22.65	4 13 0
Wire rods	41.40	8 10 0	30.44	6 5 0	30.44	6 5 0	30.44	6 5 0
FINISHED STEEL								
Standard rails	$40.18	8 5 0	$31.66	6 10 0	$31.66	6 10 0	$31.66	6 10 0
Merchant bars	1.74c	8 0 0	.99c	4 10 0	.99c	4 10 0	.99c	4 10 0
Structural shapes	1.68c	7 15 0	1.12c	5 1 6	1.12c	5 1 6	1.02c	4 13 0
Plates, ship, bridge and tank	1.79c	8 5 0	1.27c	5 15 0	1.27c	5 15 0	1.49c	6 15 0
Sheets, black, 24 gage	2.17c	10 0 0	2.09c	9 10 0	2.09c	9 10 0	2.20c	10 10 0
Sheets, galvanized, 24 gage, corrugated	2.47c	11 7 6	2.52c	11 8 9	2.52c	11 8 9	2.97c	13 10 0
Bands and strips	2.17c	10 0 0	1.16c	5 5 0	1.16c	5 5 0	1.29c	5 17 6
Plain wire, base	2.06c	9 10 0	1.46c	6 12 6	1.46c	6 12 6	1.43c	6 10 0
Galvanized wire, base	3.04c	14 0 0	1.76c	8 0 0	1.76c	8 0 0	1.67c	7 12 0
Wire nails, base	2.39c	11 0 0	1.46c	6 12 6	1.46c	6 12 6	1.49c	6 15 0
Tin plate, base box 108 pounds	$ 4.38	0 18 0	.....	.....	.....	.....	$ 9.01	1 17 0

*France

Domestic Prices at Works or Furnace—Last Reported			Francs		Francs		Marks	
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$16.44	3 7 6	$19.31	490(2)	$17.08	610	$19.83	83
Basic pig iron	15.95	3 5 6	20.69	525(1)	13.72	490	21.14	88.50
Furnace coke	3.17	0 13 0	6.62	168	5.74	205	5.14	21.50
Billets	29.22	6 0 0	24.43	620	22.68	810	28.07	117.50
Standard rails	1.79c	8 5 0	1.46c	810	1.62c	1,245	1.47c	136
Merchant bars	1.74c	8 0 0	1.18c	655	1.20c	925	1.48c	137
Shapes	1.84c	8 10 0	1.26c	700	1.22c	940	1.45c	134
Plates, ship, bridge and tank	1.95c	9 0 0†	1.46c	810	1.50c	1,150	1.65c	153
Sheets, black, 24-gage	2.28c	10 10 0	2.72c	1,510	2.54c	1,950	1.36c	126
Sheets, galvanized 24 gage, corrugated	2.58c	11 17 6	3.52c	1,955	2.80c	2,150	3.67c	340
Plain wire	2.06c	9 10 0	2.03c	1,125	2.15c	1,650	2.34c	217
Bands and Strips	2.17c	10 0 0	1.35c	750	1.50c	1,150	1.72c	159

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 0d ($3.17) f. o. b. Ferromanganese £19 6s 0d ($93.99) delivered Atlantic seaboard, duty-paid. German ferromanganese £12 5s 0d ($59.66) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

Machinery

Tool Builders Base Hopes on Fall Months as Summer Slump Continues

New York—Improvement in buying and inquiry for machine tools is spotty, largely confined to sentiment rather than orders. July volume was well below June, also a light month. Equipment builders are looking hopefully to September to bring a more pronounced improvement. Many plants continue on curtailed schedules with little business on the books. Prices on standard tools are firm, although bids on lathes and milling machines for the government recently brought out rather wide price spreads.

Several dealers report a slight increase in orders and inquiry, although the former are confined to one or two units at a time. Others note no improvement. General Electric has a few tools pending and recently placed a borer. There are signs of greater activity among radio builders, a Camden, N. J., plant putting on several thousand men last week. Airplane engine builders have little business. Ball bearing plants are barely operating. Automotive buying is nil.

Railroads continue out of the market, taking but few tools. Figures are in on considerable equipment for the New York Central, but the business is still unclosed. But three tools have been placed against the 16 asked for by Delaware, Lackawanna & Western earlier in the year. Other eastern roads are not buying. Most railroad shops will reopen next month after being down.

Not since the business placed with a Vermont shop by a Western interest some weeks ago, has there been much activity in grinding machinery. Textile machine builders are taking a few orders but the demand is spotty.

Worcester, Mass.—Save for some activity originating in automobile accessory shops the machinery market shows little change. A Cleveland company is inquiring for four lathes. While there has been no direct pull yet grinder manufacturers are watching closely public reception of the new 8-cylinder automobile models in the hope that heavy production will call for new machinery in automobile shops.

Pittsburgh—Machine tool sales are dragging, with the near-future outlook dimmed slightly by holdups and abandonment of work instituted earlier in the year. Inquiry is fairly well maintained but is spotty with a lack of general interest in tool buying. Orders still are confined to only a few tools at a time, with large lists lacking in inquiry as well as in awards. Purchases by railroads and steel companies continue slow. Westinghouse Electric & Mfg. Co. continues a steady buyer.

Chicago—While not much hope is expressed as to a pick-up in machine tool sales in the next 30 days, it is felt in this market that August will see the opening up of a number of important inquiries. Industrial concerns whose financial reserves have not been seriously impaired in the last few months are known to be studying their replacement needs. Most dealers report slow business and only moderate inquiry, but one or two have booked more in July than in about 60 days previous. A steelworks is in the market for a large planer, grinder and about five lathes, while inquiries are out for a boring mill and a number of drills. Chicago, Burlington & Quincy railroad will receive bids Aug. 1 on a 36-inch crank shaper, 4-inch heavy-duty drill press, 7-foot radial drill, and a motor-driven vertical drill press. Chicago board of education is expected to award shortly a large number of miscellaneous shop tools. Used tool dealers report slow business, but auction sales of used equipment result in fairly high prices.

Cleveland — Buying activity in machine tools and other industrial equipment continues at low ebb, and the hot weather of the past week has been anything but a stimulus. As is the case in other industrial centers the advent of an eight-cylinder model of a popular make of automobile is looked upon as creating a possibility for machinery buying. Nothing has developed out of this as yet, however. In connection with a financial report just issued by a large Cleveland machine tool builder, the opinion is voiced that the bottom of the present slump has been touched, but the date for active recovery is not hazarded.

European buying of machine tools which usually has helped to tide things over at a time like the present, has ceased almost entirely. The world-wide nature of the industrial depression accounts for this in part, but the major reason is active resentment against the new tariff schedule. This condition has been aggravated by the recent failure of one of the largest machinery dealers in Germany.

Industrial Brownhoist Corp. here has been awarded contract by the Chesapeake & Ohio railroad for coal handling and auxiliary equipment for construction work at Richmond, Va.

Steel Windows Simplified

Washington—The solid section steel window simplification program has been approved and has become effective, according to the simplified practice division of the bureau of standards.

The recommendations were sent out to manufacturers, distributors and users May 2.

Exports of Metalworking Machinery

	June		January through June	
	1930	1929	1930	1929
Engine lathes	103	65	721	447
Turret lathes	73	34	280	282
Other lathes	75	82	446	489
Vertical boring mills and chucking machines	19	7	141	138
Thread-cutting and automatic screw machines	55	82	423	477
Knee and column type milling machines	40	32	199	230
Other milling machines	74	76	450	377
Gear-cutting machines	69	41	262	248
Vertical drilling machines	38	36	333	215
Radial drilling machines	23	9	122	63
Other drilling machines	83	81	1,055	922
Planers and shapers	27	47	240	260
Surface grinding machines	13	54	143	116
External cylindrical grinding machines	49	44	350	409
Internal grinding machines	12	41	239	250
Tool grinding, cutter grinding, and universal grinding machines	182	177	966	841
Pneumatic portable tools	1,563	1,707	10,539	12,290
Chucks for machine tools	1,528	2,448	15,996	10,117

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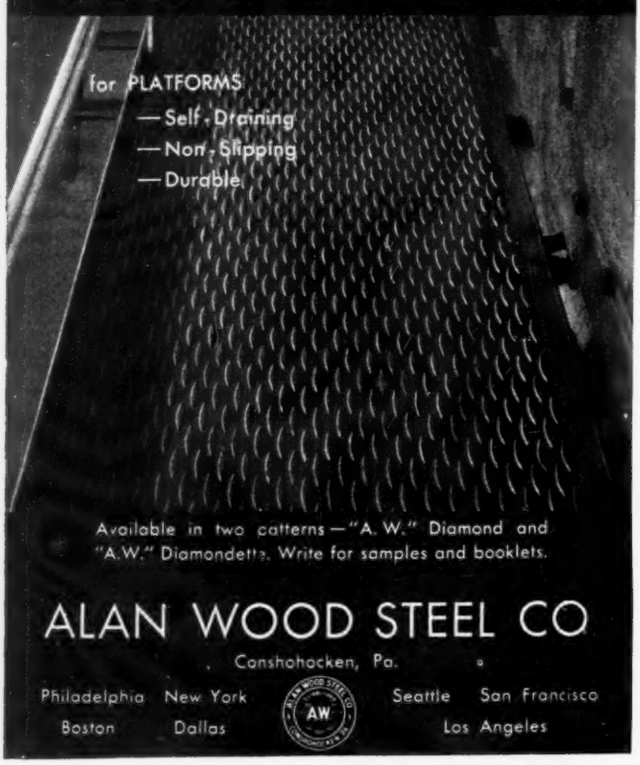

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Construction and Enterprise

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New England

NEW BRITAIN, CONN.—Vulcan Iron Works, John street, branch of Eastern Malleable Iron Co., Naugatuck, Conn., has plans for the construction of a 1-story plant, 70 x 175 feet. Cost is estimated at $50,000. M. J. Unkelbach, 52 Main street, is architect.

TORRINGTON, CONN.—Hotchkiss Bros. Co., Water street, has awarded contract for the construction of a 1-story, 50 x 150-foot plant addition. Company manufactures cabinets.

BOSTON—Plant of E. T. Ryan Iron Works Inc., at 15 Braintree street, Allston, was recently damaged by fire to the extent of $10,000.

BROCKTON, MASS.—Eastern Massachusetts Street Railway Co., 38 Chauncey street, Boston, is receiving bids for reconstruction of a 1-story car house on Torrey street. Plans are private. Cost is estimated at $40,000.

CAMBRIDGE, MASS. — Simplex Wire & Cable Co., 201 Devonshire street, Boston, has a building permit for plant alterations on Franklin street. Cost is approximately $3500.

CAMBRIDGE, MASS.—W. Galvin, 30 Brattle street, has awarded contract for a 1-story service and repair garage, 65 x 90 feet, at 15 Bennett street. Estimated cost, $40,000.

SALEM, MASS.—Plant of Gagne Brass & Aluminum Foundry, 56 Jefferson avenue, recently was damaged by fire.

PROVIDENCE, R. I.—Providence Auto Equipment Co. Inc., care F. Kellog, 69 Mathewson street, will build a 1-story addition to its service station at Fontaine and Franklin streets. Cost is approximately $40,000.

New York

BATAVIA — Contractors' Machinery Corp. has been incorporated with $10,000 by Stedman & Waterman.

BROOKLYN—Superior Tin Ware Mfg. Corp. has been incorporated with $20,000 capital by Harry Tabershaw, 200 Fifth avenue, New York.

BROOKLYN—Metropolitan Parquet Sanding Corp. has been incorporated with $10,000 capital by B. D. Barnett, 26 Court street, to deal in floor scraping machines.

BROOKLYN—Gowanus Iron Works has been incorporated with $5000 capital by Erwin Weiss, 26 Court street, to operate an iron works.

NEW YORK—Strong Spring & Bed Mfg. Corp. has been incorporated with $20,000 capital by M. Fuchs, 233 Broadway.

NEW YORK—Han-Tra Corp. has been incorporated with $100,000 and 3000 common shares by Roosevelt & O'Conner, 120 Broadway, to operate a machine shop.

NEW YORK—Machinery & Equipment Corp. has been incorporated with $10,000 capital by D. Levine, 25 West Forty-third street.

NEW YORK—Presto Electric Co. has been incorporated with $80,000 capital by Oscar Habas, attorney, 66 Court street, Brooklyn, N. Y., to deal in electrical appliances.

Pennsylvania

ALTOONA—Keystone Armature Works, F. J. Skonier, 1814 Union avenue, will build a 2-story plant and storage building, 50 x 50 feet, on Union avenue. Estimated cost, $40,000. D. G. Puderbaugh, Myers building, is architect.

NORRISTOWN—Plant of Norristown Machine Works, Lafayette and Green streets, recently was damaged by fire. Loss is estimated at $10,000.

OIL CITY—Pennsylvania railroad is reported to be planning extensions in its repair shops here, at a cost of about $200,000.

PHILADELPHIA—Rose Mills Inc., York and Waterloo streets, has awarded contract to George Roe, 7711 Lyons street, for the construction of a generator room, at a cost of $5000.

PHILADELPHIA — Sharp & Dohme Inc., manufacturing chemist, 1025 Arch street, has let contract to Day & Zimmerman Engineering & Construction Co., 112 North Broad street, for a warehouse and boiler plant at 623 North Fifteenth street. Estimated cost, $100,000.

PITTSBURGH—Pattern shop of the Springfield Foundry Co., 3213 Smallman street, recently was damaged by fire. Loss is estimated at $20,000.

PITTSBURGH—Atlantic Refining Co., care W. J. Patterson, 5733 Butler street, is receiving bids for the construction of a 2-story, 44 x 77-foot boiler house. Cost is approximately $40,000.

SEWICKLEY—Duquesne Light Co., 435 Sixth street, Pittsburgh, has begun construction of a 1-story substation at Shadwick and White streets, at a cost of $150,000. Byllesby Engineering & Management Corp., 435 Sixth avenue, is engineer.

New Jersey

EAST ORANGE—Sectional Steel Golf Units Corp. has been incorporated with 100 common shares by Stanley L. Gedney Jr., 525 Main street, to manufacture miniature golf course equipment.

NEWARK — Chippewa Steamboat Corp. has been incorporated with 2500 common shares by James B. Reilly, 788 Broad street.

NEWARK — William Johnson Inc. has been incorporated with $10,000 capital by Sorg, Duncan & Bailey, 1060 Broad street, to manufacture tools.

NEWARK—Viking Tool & Machine Co., 745 Sixty-fifth street, Brooklyn, N. Y., manufacturer of special machinery and precision instruments, has purchased a plant on the Passaic river at the foot of Mill street, formerly owned by Eck Dynamo & Motor Co. Several units comprise 53,000 square feet of floor space.

Ohio

CINCINNATI—State department of public welfare, Oak and Ninth streets, Columbus, O., is taking bids on four boilers and two generators for new power unit at Longview state hospital.

DAYTON—Dayton Scientific Corp. has been incorporated by George F. Holland, Callahan Bank building, to manufacture radio and electrical devices.

MASSILLON—Stainless Steel Products Corp., incorporated here by Merle D. Evans, attorney, will begin operations in a local plant, manufacturing building and hardware supplies, automobile accessories, kitchen equipment and industrial machinery equipment.

MARION—Marion Vault Mfg. Co. has been incorporated with 1000 no par shares by J. Howard Swink and C. A Owens.

WARREN—Federal Machine & Welder Co. has announced an expansion program which will cost $250,000. New plant buildings will be erected and new equipment will be purchased. Operations will be increased 125 per cent and employment 25 per cent.

WOOSTER—Mackintosh, Hemphill & Co., Twelfth and Etna streets, Pittsburgh, will add machine tool equipment to its plant here. Company manufactures rolling mill machinery.

Indiana

CONNERSVILLE—Plant occupied by Lincoln Mfg. Co., recently noted as having been damaged by fire, will be rebuilt. Owner is Mrs. Francis Sherry. (Noted July 24.)

FT. WAYNE—Hoffman Bros., 800 West Main street, will build a machine shop and service station at Main street

and Broadway. Cost is estimated at $40,000. Plans are private, and work will be done by owner.

INDIANAPOLIS—Mid-Western Co. has awarded contract for construction of a machine shop and service station at Washington street and Emerson avenue. Cost is estimated at $40,000.

INDIANAPOLIS—National Renovating Machine Mfg. Corp. has been incorporated with 3000 no par shares by William D. Headrick, 502 Fidelity Trust building, to manufacture and deal in machines and filters for the extraction of lubricating oil.

KENDALLVILLE—Flint & Walling Co., manufacturer of windmills and tanks, proposes construction of a plant addition, 60 x 125 feet, to cost $43,000 with machinery. Plans are private.

SOUTH BEND—Bendix Corp., 401 Bendix avenue, manufacturer of automotive accessories, has awarded contract for a plant unit on Bertrand street, at a cost of $100,000. Building will be 150 x 400 feet.

SOUTH BEND—Roach-Appleton Co. has plans for a 200 x 250-foot plant, to cost about $100,000. Company manufactures electrical products. Fett, Pearson & Goffeney are architects.

TERRE HAUTE—American Can Co., 120 Broadway, New York, recently noted as having plans for a manufacturing plant here, is receiving bids on the unit and an additional structure for a boiler house, 50 x 60 feet. Main unit is to be of three stories instead of two, 180 x 350 feet. Cost is estimated at $1,000,000. (Noted May 15.)

Michigan

DETROIT—Hans Gehrke, architect, 2457 Woodward avenue, is preparing plans for an undisclosed client for an engine house to be located at Hoover and Manning avenues. Unit is to be of two stories, to be constructed this year on a site 93 x 100 feet.

HOUGHTON — Copper County Motor Co., E. O. Sanregret manager, has let contracts for construction of a garage and repairshop, 80 x 125 feet, to cost $50,000.

PONTIAC—Universal Steering Arm Inc., 256 South Saginaw street, has been incorporated with $2000 capital by Arthur S. Wildrig to manufacture and deal in automobile steering arms.

Illinois

CHICAGO—Chicago Dryer Corp., 2210 North Crawford avenue, has purchased property adjoining its present plant, for future expansion.

CHICAGO—Slight damage by fire recently was sustained in a machine shop at Bridewell prison, Twenty-eighth street and California avenue.

CHICAGO — Sherman Reynolds Inc., 59 East Twenty-sixth street, has been incorporated with $10,000 capital by Saumel Blair, 140 North Dearborn street, to deal in metals and metal products.

CHICAGO—Federal Metal Weather Strip Co., 4260 Fullerton avenue, has been incorporated with $15,000 capital by Edward H. Kubitz, 160 North LaSalle street, to deal in steel and other metals.

GALESBURG—City, care of S. Nirdlinger, First Galesburg National Bank building, proposes to lay out an airport on a 137-acre tract. Cost is estimated at $50,000.

GREENVILLE—Fire Fly Industries has been incorporated with $20,000 capital by Stanford S. Meyer to manufacture electric lamps.

SYCAMORE—Liberty Coaster Mfg. Co. Inc., 6041 West Grand avenue, Chicago, manufacturer of toys, will move here and start operations about Sept. 1.

Missouri

CARTHAGE—Hercules Powder Co., Delaware Trust building, Wilmington, Del., is constructing nine plant units here under the direction of J. S. Marks, plant superintendent. Cost is estimated at $175,000. R. K. Hallett, Wilmington, Del., is engineer.

ST. LOUIS—Plant of Nelson Forge & Angle Bending Works recently was damaged by fire. Loss, $3500.

ST. LOUIS—St. Louis Screw & Bolt Co., E. J. Miller president, 6900 North Broadway, is replacing equipment for rolling bar iron with equipment for rolling steel bars.

Oklahoma

BARTLESVILLE—Phillips Petroleum Co. is taking bids on 10 pumping stations and equipment, to include electric motor-driven, centrifugal pumps or diesel engines. Stations will be located on line through Texas, Oklahoma and Kansas.

SHAWNEE—R-F Electrical Mfg. Co., Charles Fritz shop manager, plans extension of present building for enlargement of its machine shop. Lathes, drill presses and miscellaneous shop equipment will be needed.

PRYOR — Ajax Pipe Line Co., Tulsa, Okla., will build the first of a series of nine pumping stations here, in a pipe line project which will cost $20,000,000. The stations will cost about $200,000, and will be equipped with 10-ton, 5-ton and 1½-ton cranes. Contract has been awarded to Austin Co., builders, 16112 Euclid avenue, Cleveland.

Texas

HARLINGEN—City, care of B. M. Holland, aviation committee, plans construction of a new airport covering 400 acres. Bond issue for $200,000 is now pending.

HOUSTON—Speed & Service Iron Works Inc. has been incorporated with $150,000 capital by J. H. Hardcastle, 1641 Elliott street.

HOUSTON—Caldwell Welding & Machine Works has been organized with Cecil Caldwell as manager. Company will open a shop at 1911 Franklin street.

MIDLAND—Hughes Tool Co., Houston, Tex., has let contract for construction of two buildings, 96 x 170 feet and 80 x 190 feet, for repair and servicing of oil drilling tools, to Anderson & Sundquist, Midland. Construction is in charge of Wade W. Hampton, chief engineer of the Hughes company.

SUGARLAND—State prison commission, W. A. Paddock chairman, Second National Bank building, Houston, Tex., has closed bids for the construction of several units at Imperial farm, here. Included is a power house costing approximately $20,000, and an expenditure of about $80,000 for mechanical equipment, boilers, generating plant, fencing, refrigerating plant, etc.

Wisconsin

HARTFORD—Hartford Steel Car Co., recently organized to build all-metal railroad cars of special design, will soon award contracts for erection of its first units, a plant 70 x 120 feet and an office unit. One 5-ton crane is among the mechanical requirements. D. L. McWilliams, 123 Wisconsin avenue, Milwaukee, is in charge.

KENOSHA—William E. O'Brien, city manager, is taking bids for one automatic pump, 1350 gallons per minute, and one automatic pump, 300 gallons per minute, with 200-volt, 3-phase, 60-cycle motors.

NEW RICHMOND—Downing Mfg. Co., Downing, Wis., manufacturer of refrigerator show cases, may move its plant and offices here.

RACINE—G. E. Nelson, commissioner of buildings, closes bids August 1 for a new boiler house, 51 x 63 feet, one and two stories, on Washington avenue. J. Mandor Matson, Baker building, is architect.

RACINE—Belle City Malleable Iron Co., 1442 Forest street, has let contract to Nelson & Co. for a 1-story shop addition, 40 x 80 feet.

STEVENS POINT — City council has authorized construction and equipment of a 2-story unit for the municipal water and light department, for housing offices and shops. C. E. Van Hecke is manager of the department. Building will cost $25,000.

WEST ALLIS—Board of industrial education probably will call for bids August 22 for the fourth unit of West Allis vocational school at Sixty-third and Colburn avenues. Estimated cost, $80,000. R. A. Messmer & Bros., 221 Wisconsin avenue, Milwaukee, are architects.

North Dakota

GRAND FORKS, N. D.—City has voted bonds amounting to $225,000 for improvements in the munici-

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WHEN you want Small Tools such as Punches, Dies, Rivet Sets, Chisel Blanks and Coupling Nuts in a hurry, specify Clevelands and you will not only get prompt shipment but you will also get Small Tools that are made from the right kind of material — correctly heat-treated and hardened—accurate and dependable.

You may require one size or many sizes. The quantity may be large or small. In any case, although the demand for Cleveland Small Tools necessitates immense shipments every day, it is practically certain that Cleveland has in stock the Small Tools you need, ready to ship immediately.

When you want Small Tools in a hurry, 'phone or wire and your order will be loaded and on its way to you within a few hours.

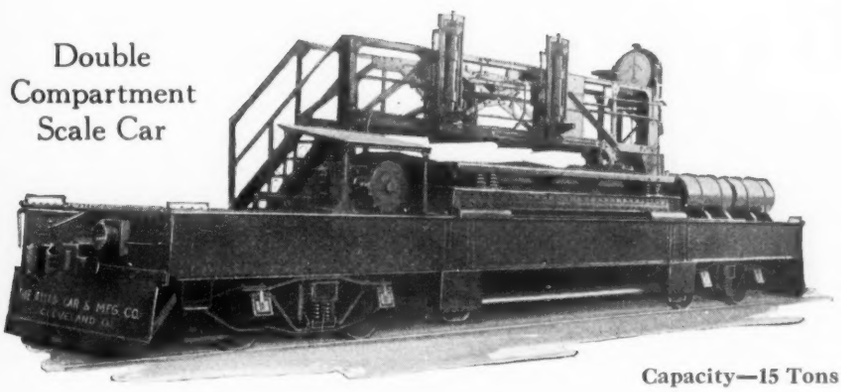
Punches	**Dies**
Rivet Sets	**Chisel Blanks**
Coupling Nuts	**Shear Blades**
Pistons	**Drift Pins**
Barrel Pins	**Markers**

etc.

THE CLEVELAND PUNCH & SHEAR WORKS CO.
CLEVELAND OHIO, U.S.A.

ATLAS CARS

Double Compartment Scale Car



Capacity—15 Tons

On many of the larger furnaces double compartment scale cars are found highly profitable. These cars permit the picking up of two skip loads at one trip, thereby saving time especially in regard to spotting the car.

ATLAS Double Compartment Cars have air operated cylinders for controlling bin gates, and are equipped with ATLAS Indicating and recording mechanism.

Two of these cars are in use at the new furnace of the Inland Steel Company, Indiana Harbor, Ind.

The ATLAS Car & Mfg. Co.

Engineers Cleveland, Ohio *Manufacturers*

ATLAS Products

Diesel and Gas Electric Locomotives—Storage Battery Locomotives—Electrically operated Industrial Cars —Scale Cars and Weighing Cars of all kinds—All kinds of Industrial Cars—Ore Transfer Cars and Blast Furnace Charging Cars—Pushers, Charging Cars, Door Handling Machines, and Coke Quenching Cars for By-Product Coke Ovens. Atlas Patented Indicating and Recording Mechanism for Weighing Scales

pal waterworks, including pumping station. Burns & McDonnell, 402 Interstate building, Kansas City, are engineers.

Iowa

BURLINGTON—City council plans a new hangar at municipal airport here, 64 x 100 feet.

CEDAR FALLS—Clay Equipment Corp., through J. B. Clay, president, advises that some machinery has been purchased for the addition to its sheet metal department now being erected, but that some smaller items may yet be required. (Noted July 17.)

Kansas

INDEPENDENCE—City is considering the purchase of a diesel engine unit with auxiliaries for the municipal power plant.

Colorado

PUEBLO—Colorado Fuel & Iron Co., W. A. Maxwell Jr. manager, is remodeling its blast furnaces in connection with improvements to its steel works. Estimated cost, $200,000.

PUEBLO—Highway shops maintained by the county board of commissioners, recently noted as having been damaged by fire, may be rebuilt, according to a communication from the board. One complete unit was destroyed. Facilities will be replaced, subject to decision of the board. (Noted July 17.)

Arizona

FLAGSTAFF—National Guard of Arizona, J. F. Pomeroy adjutant general, Phoenix, Ariz., plans construction of a permanent encampment here, including power house and other units, to be known as Fort Alexander M. Tuthill. Entire project will call for an expenditure of $100,000.

PHOENIX — Camelback water conservation district, care of Reed & Baker, engineers, Fleming building, has preliminary plans for a water system, to include pumps and motors, seven booster pumps, 10 to 200 horsepower. Cost of project, $425,000.

Southern States

DOVER, DEL.—Electric Metal Products Corp. has been incorporated with $160,000 capital by Capital Trust Co. to engage in a general manufacturing business.

DOVER, DEL.—Treadway Corp. has been incorporated with 1000 common shares by United States Corp. Co. to deal in machinery.

WILMINGTON, DEL.—Aluminum Collapsible Bed Corp. has been incorporated with $40,000 and 2500 common shares by Charles G. Guyer, Equity building.

WILMINGTON, DEL.—Metal Mold Casting Corp. has been incorporated with $1,000,000 capital by Delaware Charter Co., to deal in metals, alloys and tools.

MIAMI, FLA.—American Refrigerator Car Co., care of A. B. Small, attorney, new court house, is being organized to manufacture mechanical refrigeration for freight cars. Devices were invented by R. C. Snell and S. G. House, 2384 Southwest Tenth street.

BALTIMORE—Acme Steel & Engineering Co., fabricator of iron and steel, is installing new machinery and will add new equipment in the future.

CURTIS BAY, MD.—Commercial Pigments Corp., 17 East Forty-second street, New York, has awarded contract for the construction of plant units, including a machine shop, 70 x 92 feet. Cost of project is approximately $200,000.

PRENTISS, MISS.—City will call for bids soon for furnishing equipment for municipal power plant.

CHATTANOOGA, TENN.—Plant of Wheland Co., manufacturer of saw mill and transmission machinery, was recently damaged slightly by fire.

CHATTANOOGA, TENN.—William H. Patterson, 6019 Grafton avenue, Pittsburgh, has acquired the plant of the Fairyland Co. at Twenty-eighth street and Belt railway. Plant will be improved and machinery installed for the manufacture of Tom Thumb golf equipment.

MEMPHIS, TENN. — Southern Boiler & Tank Works, recently noted as having suffered fire damage to its plant, has established a temporary office at 1269 Thomas street, and will immediately rebuild the plant, destroyed at a loss of $35,000 to $45,000. T. S. Stanton is general manager. (Noted July 24.)

SOUTH WASHINGTON, VA. — Capitol Aircraft Sales Inc. has been incorporated with $50,000 capital by William L. Livingood to build, repair and deal in airplanes.

Pacific Coast

SEATTLE—Zandt Brass Foundry Co., 413 Railroad avenue south, has been incorporated with $15,000 capital, by John Zandt, to operate a foundry.

TACOMA, WASH.—Board of contracts and awards has awarded contract for municipal power plant No. 2 on Lake Cushman power project. Cost is estimated at $40,000.

PORTLAND, OREG. — Portland Metal Spinning Works plans to erect a plant building at 394 Grand avenue, to cost $7000. Structure will be 50 x 80 feet.

SALEM, OREG.—City may purchase, extend and improve Salem water system now owned by Oregon-Washington Water Co. Bonds for $2,000,000 have been voted. Barr & Cunningham, Spalding building, Portland, Oreg., engineers, will investigate.

COLMA, CALIF. — Plant of the American Box & Drum Co., 610 Front street, recently was damaged by fire. Loss is estimated at $100,000.

LOS ANGELES—City bureau of power and light has plans for the construction of a power substation. Estimated cost, $135,000.

LOS ANGELES — Universal Pictures Corp., Universal City, will construct a 3-story laboratory, 76 x 150 feet, and a 2-story, 26 x 125-foot production unit. Combined cost is estimated at $180,000. H. H. Walker, care of the owner, is in charge.

OAKLAND, CALIF.—C. H. Will Motors Corp., 60 Eleventh avenue northeast, will construct a plant here for the manufacture and assembly of motor busses. Unit will be 125 x 200 feet and will cost approximately $50,000. Contract has been awarded to Austin Co., builders, 16112 Euclid avenue, Cleveland.

PASADENA, CALIF.—City, G. K. Hopper city engineer, plans to alter compressor and power house in connection with sewage disposal plant.

REDWOOD CITY, CALIF.—Pacific Gas & Electric Co., 245 Market street, San Francisco, is planning to erect service buildings here, to include garage, warehouse, machine shop, etc. Plans are private. Cost is estimated at approximately $40,000.

SAN FRANCISCO—Diesel Engineering Corp. Ltd., has been formed here with Miles B. Nabors as president, and with headquarters at 820 Mills building. Capitalization is $500,000. Company will manufacture and deal in diesel engines and appliances.

SAN FRANCISCO—Schlage Lock Co., 20 Bayshore avenue, will expand its present plant at a cost of about $25,000. Contract has been awarded to Austin Co., builders, 16112 Euclid avenue, Cleveland.

STOCKTON, CALIF.—Pacific Gas & Electric Co., 245 Market street, San Francisco, plans to build a 100 x 150-foot garage, warehouse, shop buildings, storage sheds, and additional equipment will be purchased for its substation at Church and Center streets. Cost of the project $500,000. Plans are private.

SUSANVILLE, CALIF.—California Utilities Co. plans to erect a power substation here. Estimated cost, approximately $80,000.

WILMINGTON, CALIF. — Ford Motor Co., Fordson, Mich., has received bids for construction of a plant unit, 86 x 480 feet, for the manufacture of body parts here. Building will be located on the Ford site off Cerritos channel, consisting of 40 acres, and will cost about $150,000. Production is planned for February 1, 1931.

Dominion of Canada

MONCTON, N. B.—New Brunswick Electric Power Commission, A. E.

Used in Making

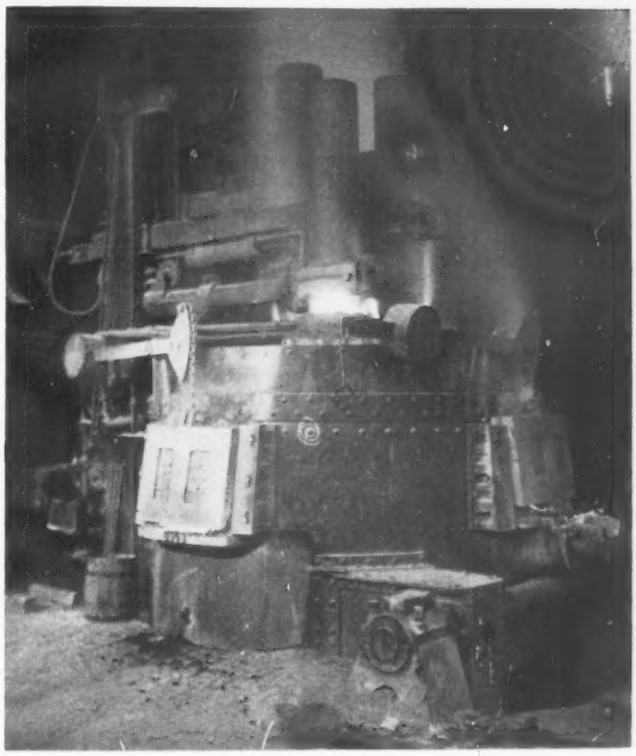
DAMASCUS

MANGANESE AND ALLOY

Steel Castings

Our modern foundry is equipped with a three ton Heroult electric furnace with a capacity of 200 tons per month. We are prepared to produce castings of from one to 750 pounds in Manganese and Alloy Steels.

For over a quarter century we have been specializing in making castings for heavy duty service. Our products have been successfully used in parts subject to the most severe service—such as digger teeth, crusher bars, chain links, gears, clamshell or shovel buckets and dippers, rug mill knives, scrapper bars, etc. If you have need of castings of such hardness and strength, get in touch with us.



Damascus Steel Casting Co.

New Brighton, Pa., (Pittsburgh District)

PICKANDS MATHER & CO.

CLEVELAND, OHIO

IRON ORE
PIG IRON
COAL

Reilly chairman, 5 Canterbury street, St. John, N. B., proposts to construct a power plant here.

DRYDEN, ONT.—Dingwall Motors Ltd. has been incorporated with $50,000 capital by Donald G. Dingwall to manufacture and deal in automobiles, engines and machines.

TORONTO, Ont.—Flexlume Sign Co. Ltd., 1074 Queen street east, will build a 2-story plant addition. N. A. Armstrong Co. Ltd., architect, 7 King street east, wil call for bids.

LONDON, ONT.—Plant of E. S. Leonard & Sons recently was damaged by fire to the extent of $50,000. Company manufactures boilers. Company is reported to be in the market for general equipment for machine and pattern shops.

OTTAWA, ONT.—Department of public works, S. E. O'Brien secretary, has awarded contract for the construction of a mining and metallurgical laboratory to A. Garvock, Sparks street. Cost of the project is estimated at $100,000.

PENETANGUISHENE, ONT. — Dominion Stove & Foundry Co. Ltd. has arranged with Spencer Heater Co. Williamsport, Pa., to manufacture heaters and boilers for the latter company. Dominion company will install special machinery, patterns and equipment at a cost of $75,000, this year. Early next year a molding shop addition may be built.

TORONTO, ONT.—Patterson Electric Ltd. has been incorporated with $40,000 capital by John Latimer, 70 Albert street, to carry on the business of electrical engineer and manufacturer.

TORONTO, ONT.—Gendron Mfg. Co. Ltd., has been incorporated with 1000 no par shares by C. L. Rice, 89 Galt street, to manufacture and deal in baby carriages, bicycles, bathroom fittings and wire and steel wheels.

TORONTO, ONT.—Hydro Electric Power Commission of Ontario, 190 University avenue, F. A. Gaby chief engineer, proposes additions to equipment and construction of substations, as follows: substation and equipment in Painswick; substation and equipment at Utterson; equipment at Barrie; equipment at Fennels Corners; substation and equipment at Fergusonvale; substation at Thorold; equipment at Hespeler. Cost of project, $50,000.

TORONTO, ONT.—Vacu-Draft Ltd., has been incorporated with $40,000 and 10,000 no par shares by Thomas D. Delamere, 16 Walker street, to manufacture and deal in draft producing devices.

MONTREAL, QUE.—Engineering Products of Canada Ltd., recently incorporated, will manufacture fire pumps. D. C. Macpherson, 1410 Stanley street, is president.

REGINA, SASK.—City, D. A. R. McCannel city engineer, is considering improvements to its new water supply system, at a cost of about $6,000,000. Wynne-Roberts Son & McLean, engineers, will make a report to the city.

New Trade Publications

LUBRICATION — Lubrication Devices Inc., Battle Creek, Mich., has published a booklet describing its system of lubrication adapted to steel mill and other heavy duty equipment. It is illustrated, color being used effectively.

GAS PRODUCERS—A new edition of its booklet on gas producer operation has been issued by the L. J. Wing Mfg. Co., 154 West Fourteenth street, New York. It is designed for those in charge of operating plants using producer gas as a fuel.

STEEL STRAPPING — Brainard Steel Corp., Warren, O., in a current bulletin describes its safety strapping system for cartons, crates and boxes. Application of the strapping by means of special tools is illustrated and a general idea is given of this application of steel to making containers more substantial.

INDUSTRIAL HEATING—Skinner Bros. Mfg. Co. Inc., St. Louis, has issued a bulletin on the control of heat and heating cost by use of its system and equipment in industrial and other large buildings. Illustrations and curve diagrams show the principles involved and the equipment enjoyed to attain that end.

UNIT PULVERIZER — Whiting Corp., Harvey, Ill., has issued for its subsidiary, the Grindle Fuel Equipment Co., a bulletin on its unit pulverizer for preparing coal for use in firing industrial furnaces and small boilers. Illustrations show characteristic installations and details of construction.

PNEUMATIC DRILLS — Sullivan Machinery Co., Chicago, has issued two bulletins, one devoted to a rotator hammer drill for general rock excavation in mines, quarries and general contracting work. A table of equipment is included. The other features a heavy-duty stopper for mine service.

GEAR SHAPER—National Tool Co., Cleveland, has issued a bulletin on its universal gear shaper, which describes in text and diagrams how the device works in generating all forms of gears. Spur and spiral gears are generated with the same straight-tooth cutter as is used for straight gears.

WELDING ELECTRODES — A bulletin by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., describes its welding electrodes for general welding of steel, designed to reduce spattering, resulting in a quiet, stable and flexible arc. Uniform melting rate assures quick penetration and a bead that blends with the surface.

ELECTRICAL EQUIPMENT — General Electric Co., Schenectady, N. Y., has issued recent bulletins as follows: Atomic-hydrogen arc welding equipment, mechanical-drive turbines, semi-automatic reduced-voltage starters, thermostats, selsyns, synchronous motors, automatic full-voltage controllers, oil circuit breakers, photo electric relays, air drawing-oven.

STEEL CASTINGS—Edgar Allen & Co. Ltd., Sheffield, Eng., has issued the third edition of its steel foundry book. It has been enlarged and redesigned including data on the manufacture, heat treatment and properties of castings in seven kinds of steel. It gives a full description of conditions in steel foundry practice as an aid to buyers of castings.

AUTOMATIC CONTROL—Ryan, Scully & Co., 3711 Wissahickon avenue, Philadelphia, manufacturer of industrial furnaces, forges, conveyors and automatic control equipment, has published a catalog of its line of automatic control equipment for use with gas, air or liquids, in connection with temperature and combustion control. It contains illustrations and diagrams showing operation, purposes and sizes.

INDUSTRIAL FURNACES—Swindell-Dressler Corp., Pittsburgh, formed by consolidation of William Swindell & Bros., American Dressler Tunnel Kilns Inc., Gas Combustion Co. and Duquesne Burner Co., tells in a current booklet of the 80 years of service to industry since the Swindell company began building industrial furnaces. Products of the consolidated company are illustrated and described.

HEAT TREATMENT—Leeds & Northrup Co., Philadelphia, is distributing a catalog on the hump method of heat treatment of steel. The catalog is similar to previous issues, with additional matter, particularly discussion of the problem of control of the rate of heating above the critical point with the same precision as below. Solution of the problem by use of company's equipment is suggested.